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THE JOURNAL
OF THE
American Medical Association

Subscription, $12.00
VOLUME 141, No. 18
Published Weekly at
535 North Dearborn Street, Chicago 10, Illinois
Single Copy, 35 Cents
DECEMBER 31, 1949

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The Journal of the
American Medical Association
Published Under the Auspices of the Board of Trustees

VOL. 141, No. 1
CHICAGO, ILLINOIS
SEPTEMBER 3, 1949

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BULBAR POLIOMYELITIS

Favorable Results in Its Treatment as a Problem in Respiratory Obstruction

THOMAS C. GALLOWAY, M.D.
Evanston, Ill.

and

MARTIN H. SEIFERT, M.D.
Wilmette, Ill.

In bulbar poliomyelitis it has usually been ssumed at the grave effects were due to the direct ction of e virus itself on the central nervous system. n 1943, ne of us (T. C. G.)[1] presented the idea that s retional bstruction and anoxia were much more i portant. uring the ensuing time that conviction has grown. the past two years we have been able to ey our reatment to that concept.

With such treatment in the past two and ne-half ears at the Evanston Hospital, we have had n deaths 15 cases of bulbar poliomyelitis. The mort ty rate or the bulbar form of the disease was 38.8 pe cent in llinois outside of Chicago during 1947 an 1948.[2] he mortality rate among residents of Chi go was 7 per cent in 1948, for which figures are a ilable[3] table). Our favorable results in the sam region luring the same time could hardly be exp ned by hance or variation in the disease. Six o the 15 atients in our series were desperately ill a would, ve believe, have died without tracheotomy d other pecial measures.

We have added nothing essentially nev to our nethod of treatment since 1943. We do beli e, however, that we can now appreciate much better e situations which condition the time and type of int ention; he specific indications; the precise and p nstaking details of technic, and the alertness, decisio nd conviction with which they must be carried out.

An appreciation of the serious danger fr anoxia for even a brief time and the recognition o its presence and cause seem to be the basis of ccessful management.

Anoxia is an accepted term, but its use sh ld carry much greater implication because it is as ciated in spiratory obstruction with dangerous co ntrations carbon dioxide. There may be a sort of spiratory ompensation. Besides the general effect the central nervous system with depression of the spiratory and other centers in the medulla, there ar mportant secondary effects. These may involve the adrenals,[4] the muscle and conduction mechanism of the heart,[5] the circulatory system by both peripheral and central effects, and probably other organs, with respiratory and circulatory collapse or even shock.

It seems strange that in discussion of respiratory obstruction so little attention has been given to the narcotic and even lethal effects of carbon dioxide accumulation. There is evidence that it may be, in part at least, responsible for dyspnea and restlessness, mental depression, disorientation and coma, increased blood pressure with later fall, vasomotor failure and circulatory collapse.[6] All of these have been reported as symptoms of bulbar poliomyelitis.

Blalock, Harrison and Wilson[7] demonstrated in experimental respiratory obstruction that carbon dioxide may reach dangerous levels in the arterial blood even while oxygen saturation is still normal. That is one of the reasons we have felt that the oximeter could not be relied on in place of close clinical observation. This should indicate also that mere administration of oxygen is not enough, especially as flooding and pulmonary damage may prevent its absorption. The first essential is a cleared airway to allow absorption of oxygen and elimination of carbon dioxide.

Evidence has been recently given[8] that anoxia of even sixty seconds' duration may produce distinct morphologic changes in the brain[9]; that three to eight minutes of anoxia may produce widespread damage and necrosis in brain cells or death[10]; that repeated periods of hypoxia may have a cumulative effect[11]; that brain cells previously damaged by anoxia or infection are more susceptible to further damage by anoxia, and that edema, hemorrhage or necrosis of cells by virus infection may block oxygen absorption.[12]

Also, profound and lasting effects may follow even brief periods of anoxia although the patient lives.[13]

From Northwestern University Medical School and Ev ton Hospital.

Read before the Joint Session of the Section on In nal Medicine and the Section on Experimental Medicine and Ther utics at the Ninety-Eighth Annual Session of the American Medi Association, Atlantic City, N. J., June 10, 1949.

[1] Galloway, T. C.: Tracheotomy in Bulbar Poliomy is, J.A.M.A. **123:** 1096 (Dec. 25) 1943.

[2] Communication from Jerome J. Sievers, Division Communicable Diseases, State of Illinois.

[3] Communication from H. N. Bundesen, President, rd of Health, City of Chicago.

[4] Armstrong, H. G.: Principles and Practice of Aviation Medicine, ed., 2, Baltimore, Williams & Wilkins Company, 1943, p. 301.

[5] Best, C. H., and Taylor, N. B.: The Psychological Basis of Medical Practice, ed. 4, Baltimore, Williams & Wilkins Company, 1945, p. 213.

[6] Comroe, J. H., and Dulfs, R. D.: Artificial Respiration, J.A.M.A. **130:** 382 (Feb. 16) 1946. Sollman, T.; Pharmacology, ed. 7, Philadelphia, W B. Saunders Company, 1948. Seevers, M. H.: The Narcotic Properties of Carbon Dioxide; New York State J. M. **44:** 597 (March) 15) 1944. Best and Taylor.[5]

[7] Blalock, A.; Harrison, T. R., and Wilson, C. P.: Partial Tracheal Obstruction, **13:** 81 (July) 1926.

[8] Galloway, T. C.: The Danger of Unrecognized Anoxia in Laryngology, Ann. Otol., Rhin. & Laryng. **55:** 508 (Sept.) 1946.

[9] Thorner, M. W., and Lewy, F. H.. Effects of Repeated Anoxia on Brain, J.A.M.A. **19:** 1595 (Nov. 6) 1940.

[10] Courville, C. B.: Asphyxia as a Consequence of Nitrous Oxide Anesthesia, Medicine **15:** 129 (May) 1936. Windle, W. F., and Becker, R. F.: Asphyxia Neonatorum, Am. J. Obst. & Gynec. **45:** 183 (Feb.) 1943.

[11] Morrison, L. R.: Histopathologic Effects of Anoxia on the Central Nervous System, Arch. Neurol. & Psychiat. **55:** 1 (Jan.) 1946.

[12] Kubicek, W. G.; Holt, G. W., and Kottke, F J.: Physiology of Poliomyelitis, Phys. Med. **29:** 85 (Feb.) 1948.

[13] Courville, C. B.: Ether Anesthesia and Cerebral Anoxia: Study of Causative Factors in Serious Anesthetic and Post-Anesthetic Complications, Anesthesiology **2:** 44 (Jan.) 1941. Barach, A. L., and Rosenstine, E. A.: Hazard of Anoxia During Nitrous Oxide Anesthesia, ibid. **6:** 449 (Sept.) 1945. Preston, M. I.: Late Behavioral Aspects Found in Cases of Prenatal, Natal and Postnatal Anoxia, J. Pediat. **26:** 356 (April) 1945.

These include mental and emotional change, imbecility, insanity, athetoid and parkinsonian and even decerberate states.

The symptoms of anoxia are not always clear in the presence of other severe diseases. In fact they are all too often ascribed to the disease itself. Early symptoms of anoxia are headache, increased mental activity or occasionally brief euphoria followed by confusion, disorientation, irrationality, unresponsiveness, lethargy and finally coma. Antagonism and combativeness, which often occur, make it necessary to use less conservative measures not dependent on the patient's cooperation. Restlessness is an important early symptom. With it, the overactive patient requires more oxygen; also, the unwary attendant may be tempted to use sedative drugs, especially opiates. This may be disastrous to the patient fighting to get all possible oxygen. Dyspnea is usually an early symptom but may not be easily recognized in an exhausted patient, especially if sedatives have been given. Increased blood pressure occurred early in a high percentage of Grulee's series.[14]

Cyanosis is an uncertain sign that is poorly calculated by the average observer and greatly modified by such general factors as anemia, shock, pigmentation and carbon dioxide concentration. If pronounced, it is likely to be a late sign of imminent cardiovascular collapse and to mean that one has waited beyond the indications for intervention. According to Kubicek,[12] patients with bulbar poliomyelitis who become cyanotic most often succumb.

Comparative Mortality from Bulbar Poliomyelitis

Locality	Years	Poliomyelitis: Total No. of Cases	Poliomyelitis: Bulbar Type	Bulbar Deaths	Bulbar Mortality Rate, %
Illinois outside Chicago..	1947-1948	1,242	105	39	38.8
Chicago residents *........	1948	312	37	10	27.0
Evanston hospital........	1947-1948	127	15†	0	0

* There were 12 additional bulbar cases originating outside Chicago, of which 9 were fatal.
† Three of the 15 patients had no pharyngeal paralysis.

We classify respiratory difficulty in acute poliomyelitis clinically as of four types. With the first three there is general agreement.

1. Spinal: In the spinal type of respiratory difficulty the lesions are in the cervical and upper thoracic segments of the spinal cord with varying paralysis of the intercostal muscles and the diaphragm. Patients with this type do well in the respirator and fall easily into rhythm with it.

2. Bulbar paralysis with interference with the swallowing mechanism and resultant accumulation of secretion, food and fluids, and vomitus in or over the airway: If complications do not occur patients usually get over this difficulty in five to ten days.

3. Bulbar-spinal, a combination of the foregoing.

4. Other disturbances in rhythm and depth of respiration. Theoretically these could result from virus effect on the respiratory centers with a fulminating course. We made no such diagnoses in the 15 cases herein reported. We considered the clinical observations in so-called poliomyelitic encephalitis to be due usually to peripheral secretional obstruction plus the effect of anoxia and carbon dioxide excess on the medulla and other centers, since all patients were relieved rather promptly by the measures directed at relief of the obstruction and anoxia.

The picture of the so-called arrhythmias is confusing. One often sees patients with shallow, interrupted, cogwheel and wavelike respiratory movements. At times the intercostal muscles and diaphragm almost appear to oppose each other. We have seen such arrhythmias controlled (with serious results) for a time by thiopental sodium (pentothal sodium®), which would hardly be the case if the arrhythmia were due to central depression. A simpler explanation of this type of respiration is that it comes from a reflex or voluntary conflict between respiratory demand and the protective mechanisms which help to keep the patient from drowning in his own secretions. These irregularities usually disappear if free respiration is provided without delay.

We believe, then, that the primary difficulty in bulbar poliomyelitis is difficulty with the swallowing mechanism resulting in accumulation of secretion, food, fluids and vomitus in or over the airway, and anoxia. It is to be recalled that there is normally from 1,000 to 1,500 cc. of saliva per day, which is likely to be increased in nervous disease and with nausea.[15] To this must be added inflammatory secretion, food or fluid injudiciously given, and vomitus. We have recovered by suction from the pharynx in twenty-four hours over 2,000 cc. of fluid above any added for irrigation.

The usual mechanisms of expulsion of the fluid from the airway are here ineffective. Cough does not operate except where perfect postural drainage allows no fluid to accumulate at the level of the pharynx or beyond, since to get enough air for expulsive force deep quick inspiration would have to be made. This would result in aspiration of the overlying fluid as shown in figure 1. Cough may be difficult also because the medullary center is depressed even early, we believe, from anoxia and excess carbon dioxide. Therefore unless secretion is kept removed by treatment it will lead to anoxia by preventing ingress of air, by blocking bronchioles and by flooding and secondary damage to the respiratory area of the lungs.

The best evidence for the importance of anoxia is that the symptoms are usually so promptly relieved when the airway is cleared. In a case previously reported[1] the patient had gone from restlessness and disorientation to deep coma and had finally ceased to breathe for an estimated three minutes. Laryngoscopy disclosed that the larynx and pharynx were filled with viscid secretion which overflowed from the nose and mouth. The patient was deeply cyanotic and the pulse was almost imperceptible. A tracheotomy was hastily performed, the airway was aspirated and the patient was put in a respirator. In thirty minutes the pulse and color were good and the patient was conscious. In forty-five minutes he was demanding to be taken from the respirator. It is hard to assume that relief of any condition other than anoxia could account for this quick recovery.

Had this patient died, his death could easily have been ascribed to a so-called poliomyelitic encephalitis. Had he lived at the hypoxic level for twenty-four to forty-eight hours so that reactive changes in the brain cells registered histologically, the changes might easily have been ascribed to direct action of virus. The Minneapolis Research Commission [16] concluded that many of the clinical symptoms indicative of cerebral involvement in bulbar poliomyelitis were secondary to anoxia because they are relieved by an adequate supply of oxygen. That is decidedly our experience, especially when a cleared airway makes possible oxygen absorption.

---

[14] Grulee, C. G., Jr., and Panos, T. C.: Epidemic Poliomyelitis in Children, Am. J. Dis. Child. **75**: 24 (Jan.) 1948.

[15] Christian, H. A., in Osler, W.: The Principles and Practice of Medicine, ed. 14, New York, D. Appleton-Century Company, Inc., 1942, p. 624.

On examination of the airway by bronchoscope or through a tracheotomy in these seriously ill patients we have almost invariably found excessive and usually thick secretion and occasionally mucous plugs. On removal of obstruction there has been in most instances a rapid improvement in the mental and other symptoms.

Another effect of respiratory obstruction has been detailed in a discussion of acute tracheobronchitis [17] and need only be outlined. Because of increased negative intrathoracic pressure in the presence of respiratory obstruction there is a cupping action on the capillaries of the alveoli and mucosa with the production successively of congestion, stasis, edema, exudation hemorrhage and even plugs, with secondary atelectasis.[18] Unless this is relieved secondary infection regularly occurs, as shown by Galbraith and Steinberg,[19] with pneumonitis and atypical forms of pneumonia so often reported in such patients. The same mechanism helps also to produce pulmonary edema, especially when anoxia and an excess of carbon dioxide lead to increased capillary permeability, as shown by Drinker.[20] These conditions quickly become irreversible; hence, intervention must be immediate.

Treatment based on the preceding ideas will be discussed in more detail.

Oxygen has long been recognized as important. Tracheotomy has also been granted a rolé, although at times grudgingly. The importance of postural drainage was emphasized in a paper on bulbar poliomyelitis in 1943,[1] and an attempt at that time was made to visualize the conditions making tracheotomy a necessary and effective measure. It had been repeatedly stated that use of the respirator was usually contraindicated [21] in bulbar poliomyelitis, but we have found that in just these cases it has its greatest value, especially if, when secretions have accumulated, tracheotomy is done to bypass them and so prevent their being drawn in by negative pressure with virtual self drowning.

A trial of these measures has been given on a large enough scale to appear to justify their value, especially in the Minneapolis epidemic,[22] but there does not seem to have been enough attention given to detail and appreciation of underlying factors to make them completely effective.

OXYGEN

The advantages of oxygen are so well established in obstructed cases that its use requires little discussion. By its use while other measures are becoming effective the treatment may remain relatively simple. We have preferred to administer oxygen by nasal catheter (which is gratefully tolerated after a short time by even our younger patients) giving from 3 to 8 liters per minute. The catheter gets less in the way than tent or mask and does not hinder other treatment. We have found no advantage in the use of helium, which requires a closed system.

Administration of oxygen does not, however, relieve the physician of responsibility for clearing the airway, especially since proper respiration is so important to eliminate rapidly the dangerous excess of carbon dioxide which is present in obstructive cases and which cannot adequately be controlled by the slowly acting compensatory mechanisms.

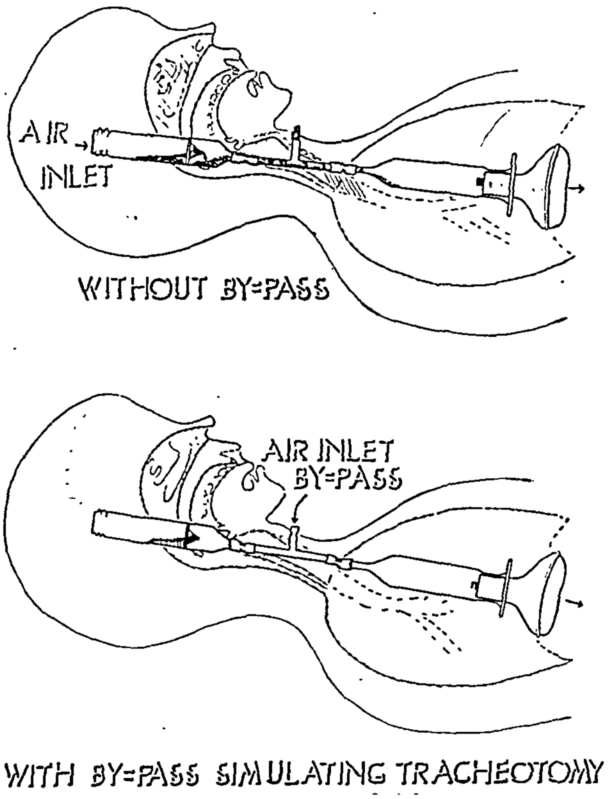

Fig. 1.—A model to simulate the effect of voluntary breathing or a respirator when there is fluid in the upper airway. With moderately viscid fluid, intravenous tube, T tube and aseptosyringe it acts as shown. When the by-pass is open no fluid is drawn in—illustrating the effect of tracheotomy. (This and the following illustration are reproduced from *Archives of Otolaryngology* **46**: 125 [Aug.] 1947.)

POSTURAL DRAINAGE AND ASPIRATION

An important procedure which is little understood is postural drainage. One of us has previously emphasized the great value of this procedure in acute infectious tracheobronchitis [17] and other forms of respiratory obstruction. Cough and other mechanisms are here ineffective. Ciliary action, if of any avail, as shown by Leonard Hill,[23] may be twice as effective with the aid of gravity. The angle of flow must be visualized from the anterior cervical area to the posterior thoracic region. As shown by figure 2, the declivity from the body axis of the trachea and bronchi is about 20 degrees. To get an actual flow from 5 to 15 degrees must be added above the horizontal, and we have usually kept the patients at a 30 to 35 degree angle of elevation. Wilson[21b] has emphasized the importance of this factor. Inattention to this has seemed the commonest error in treatment, as shown by observations and illustrations of treatment in which the foot of the bed was only raised a few inches by blocks. Insufficient elevation of the bed could be the cause of many "unexplained cases of anoxia." It is equally important that the bed does not sag, that the head is not raised or the neck twisted so that a pool of secretion lies in or over the larynx. In infants a prone position with the face to one side is well tolerated and allows fluids to gravitate to the cheek and nasopharynx.

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[16] The Bulbar Form of Poliomyelitis: I. Diagnosis and the Correlation of Clinical with Physiologic and Pathologic Manifestations, The Minneapolis Polio Research Commission, report, J.A.M.A. **134**: 761 (June 28) 1947.

[17] Galloway, T. C.: Laryngotracheobronchial Obstructions and Their Secondary Effects, Ohio State M. J. **36**: 851 (Aug.) 1940.

[18] Kernan, J. D., and Barach, A. L.: The Rôle of Helium in Obstructive Lesions of the Trachea and Larynx, Tr. Am. Laryng. A. **59**: 230, 1937.

[19] Galbraith, E. G., and Steinberg, B.: The Developmental Mechanism of Pulmonary Atelectasis, Ann. Otol., Rhin. & Laryng. **46**: 800 (Sept.) 1937.

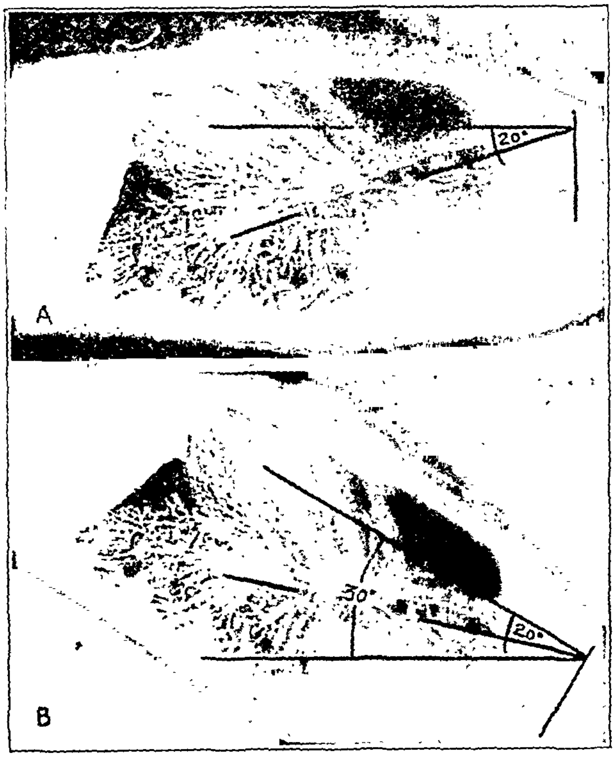
[20] Drinker, C. K.: Pulmonary Edema and Inflammation: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates, Harvard Monographs in Medicine and Public Health, no. 7, Cambridge, Mass., Harvard University Press, 1945.

[21] (*a*) Edwards, W. G.: Analysis of Fatal Cases of Poliomyelitis, California Med. **69**: 367 (Nov.) 1948. (*b*) Wilson, J. L.: Outline of the Essential Treatment of Bulbar Poliomyelitis, J. South Carolina M. A. **44**: 354 (Nov.) 1948.

[22] Priest, R. E.; Boies, L. R., and Goltz, N. F.: Tracheotomy in Bulbar Poliomyelitis, Tr. Am. Laryng., Rhin. & Otol. Soc., 1947, to be published.

[23] Hill, L.: Ciliary Movements in the Trachea, Lancet **2**: 803 (Oct. 20) 1928.

Postural drainage is not enough, however, unless secretion is removed as it collects. Because even a few minutes of anoxia can be exceedingly serious in these critically ill patients, we have not been of the opinion that we could depend on intermittent mechanical suction. We believe that continuous water suction is most important. It is used gently through a collecting bottle attached with a rubber tube (firm enough to prevent collapse) to a dependable suction apparatus with a valve to prevent backflow. The ordinary faucet attachment has not proved satisfactory. A soft rubber tube of moderate size with a lumen of at least 2 mm. is cut obliquely; its edges are rounded in a flame and a small counter opening made so that it will not grasp mucosa. It is then placed where secretions tend to pool, or a "whistle tip" catheter may be used. If posture is right this should be in the upper pharynx or cheek but may need to be in the hypopharynx. If gently placed, especially with the patient receiving some local anesthesia, it is well tolerated after a short time and causes much less nausea or interference than interrupted mechanical suction. The latter, however, may still have to be used occasionally. Connecting tubes should be of glass to permit observation of flow and should be of sufficient caliber. Medicine dropper tubes substituted as connectors against orders in 1 case were not able to pick up viscid secretion even when applied directly to it, with serious results.



2.—The lower airway is outlined with radiopaque oil: *A* represents the declivity of trachea and bronchi from body axis; *B* shows minimum elevation necessary for useful postural drainage.

The collecting bottle provides a means to measure aspirated secretion. This gives an index of fluid that must be added to maintain fluid balance and keep secretion from becoming sticky.

Postural drainage is important from the first onset of difficulty in swallowing. Dr. Edward Piszczek, the Cook County health director, wisely counsels mothers to keep the head low in such patients even during transport to the hospital.

FLUIDS AND NUTRITION

Fluid and electrolyte balance is maintained parenterally. In consideration of the large amount of fluid lost, an adult is given from 2,500 to 3,500 cc. of fluids roughly in the proportion of one third isotonic sodium chloride solution or Ringer's solution and two thirds of 5 per cent dextrose in water. It is important to see that the patient does not become dehydrated and that secretion does not become too viscid to flow and to be easily removed. Cerebral edema, however, could occur from overhydration as possibly could pulmonary edema. In 1 case we believed that generalized edema was due to sodium excess, as it was controlled by withholding the saline solution.

After the first few days a protein hydrolysate is given intravenously. Usually we have used a vitamin mixture by the same route after a few days. In our earlier cases in which protein and vitamin supplements were not given we believed that there was greater incidence of decubitus ulcers and poorer healing of tracheotomy wounds.

When the patient begins to swallow, usually after five to eight days, gavage is employed. A medium-sized catheter is used through the nose into the esophagus and is kept carefully closed except during feeding. A Levine or similar tube seems less well tolerated, is harder to introduce and is more likely to induce vomiting or reflex from the stomach. Feedings are begun with from 50 to 100 cc. and, depending on the patient's feeling of fulness, are increased in adults up to 300 or 400 cc. Usually water and a food formula are alternated every two hours, and about 1,800 calories are given daily. After feeding the patient is allowed to lie flat for one-half hour, then returned to the position for postural drainage as long as may be necessary. Free feeding is not permitted until it is well taken.

TRACHEOTOMY

It may become necessary before dangerous anoxia is established to perform a tracheotomy in order to by-pass secretion which might be drawn into the pulmonary bed by voluntary or mechanical respiration, as shown by figure 1, and to permit easy aspiration of secretion which may already be present or may later collect. This is especially important in cases in which some pulmonary edema is present. Air pressure within and without the chest must be kept nearly equalized so that a dangerous degree of negative pressure cannot occur.

From a considerable experience with respiratory obstruction it is hard to understand the dread with which many clinicians seem to regard tracheotomy.

As pointed out by Jackson,[24] Negus[25] and others, the mortality of the operation is a fraction of 1 per cent. Often bad results are ascribed to the operation itself rather than to the usually serious condition for which it is done; there is often delay in calling the laryngologist until serious anoxia with pronounced depression and cyanosis with irreversible changes are already present. Certainly a competent laryngologist should be a member of the poliomyelitis team and should examine the patient early in order to help assess the need for intervention while it can be done deliberately and without confusion, and while the patient still has rallying power. We reported 3 tracheotomies in 1943[1] and have since performed the operation on 10 other patients with poliomyelitis without noteworthy complications. Rather to our surprise, even with the respirator, we have had no pneumothorax or important emphysema. This probably did not occur because our tracheotomies were done over a bronchoscope or endotracheal tube and because the airway, which was cleared so that pressures were equalized before the skin was incised, was kept clear postoperatively. The fascial planes were not undercut and the pretracheal fascia was incised in the midline without separation; the operative funnel was well packed after the insertion of the tube. Priest, Boies and Goltz[22] in 1947 reported tracheotomy in 75 patients without serious results. Those who blame the operation for pneumothorax and emphysema should remember that emphysema with atelectasis is not infrequent in respiratory obstruction without operative intervention.[26]

We believe that the good results in this series are due largely to splendid cooperation from the outset between other clinicians and the anesthesiologist and laryngologist, to good nursing and early hospitalization, so that the man to whom problems of respiratory obstruction are commonplace is allowed full responsibility from the outset. From conversation with colleagues elsewhere we gather that all too often the practitioner, confronted by a situation which he does not understand, takes the position that he must protect the patient against the otolaryngologist, whom he considers only a technician to be called in as a last resort to do a manual job on the decision of some one else.

The problem of tracheotomy in poliomyelitis is in the stage where the same procedure in acute infectious tracheobronchitis was twenty years ago, when the mortality was from 50 to 70 per cent.[27] Now with early cooperation in that disease, the problem of which has much in common with bulbar poliomyelitis, we have had 14 successive recoveries in cases requiring tracheotomy. Davison[28] was able to report recently treatment of 15 such patients without a death. We believe similar results should not be exceptional in bulbar poliomyelitis.

There has seemed to be considerable semantic error in discussing this disease. To designate the relatively safe procedure of tracheotomy as radical is surely wrong, when it becomes much less conservative to stand by while a patient grows desperately ill from obstruction and anoxia. It is misleading to speak of "elective tracheotomy" being performed when case reports disclose that profound and progressive anoxia were already present to make the intervention an emergency one. This does not mean that we are committed to tracheotomy before there are definite indications. In this series it was performed on 6 of 12 patients with pharyngeal paralysis.

The tracheotomy in poliomyelitis should be relatively high, through the second and third tracheal rings, in order to permit easier care of the patient if the respirator is required. Special heads on the respirator or collarless respirators[29] facilitate this care, but we have found that the collar on the standard respirator can be satisfactorily retracted by a "gray iron" bar bent with wrenches and held under the steel flange. Proper mechanical humidification as described by Davison, and not steam, is important to prevent crusting after tracheotomy. If that is properly done bronchoscopic removal of plugs or crusts is seldom necessary. Irrigation through the tube, at intervals, with one to two droppers of 3 per cent warmed sodium bicarbonate solution followed by isotonic sodium chloride solution, aspirated gently by beveled rubber tube with the patient in the postural drainage position, usually prevents plugging.

The greatest value of the operation has been to by-pass secretion. If one visualizes the simple hydraulic principles involved, that viscid secretion will either prevent moving gas from entering an area of negative pressure or will be propelled by it into that area, the logic of tracheotomy should be obvious. We went through a period of grief with intubation but now see no indication for its use except for temporary bag insufflation of oxygen during tracheotomy. It does not by-pass secretion.

INDICATIONS FOR TRACHEOTOMY

The indications for tracheotomy are based on the experience which we believe indicates the validity of the previously discussed ideas. They are stated rather categorically. We post them in our ward not only for the guidance of our house staff and nurses but to prevent ourselves from being swayed to procrastinate by the idea that a particular case is quite different from its predecessors.

Following are the indications for tracheotomy:

1. Progressive anoxia with secretion in the upper airway.
2. Unconsciousness or pronounced restlessness in a patient who does not respond to other treatment in a few minutes.
3. Pronounced restlessness or stupor in a patient in a respirator, even if the paralysis is apparently of a spinal type.
4. Fluid accumulation not otherwise certainly taken care of in a patient who requires a respirator.
5. Bilateral paralysis or spasm of vocal chords.
6. Rapidly progressive bulbar symptoms.
7. Grave signs of vasomotor failure.
8. Untrained or inefficient attendants, inadequate equipment or poor cooperation of the patient, with doubt that the airway will be kept constantly free of secretions.

These indications merit further discussion.

Symptoms of anoxia must be closely watched for, including restlessness, dyspnea, disorientation, mental depression, increased blood pressure, or later fall, and cyanosis. No patient should become unconscious under observation.

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[24] Jackson, C.: Tracheotomy, S. Clin. North America **15**: 117 (Feb.) 1935.

[25] Negus, V. E.: An Explanation of the Respiratory Failure Sometimes Occurring After a Successful Tracheotomy. Tr. Am. Laryng. A. **60**: 92, 1938.

[26] Holt, L. E.: Diseases of Infancy and Childhood, ed. 8, New York, D. Appleton & Company, 1922.

[27] Jackson, C. L.: Acute Laryngotracheobronchitis, J. A. M. A. **107**: 929 (Sept. 19) 1936.

[28] Davison, F. W.: Acute Laryngotracheobronchitis, Arch. Otolaryng. **47**: 455 (April) 1948.

[29] Peterson, R. L., and Ward, R. C.: Tracheotomy in Poliomyelitis Simplified with New Respirator, Arch. Otolaryng. **48**: 156 (Aug.) 1948.

Under the third indication it is not always possible to diagnose exactly the type of involvement, especially because an originally spinal involvement may spread quickly to the bulb. Moreover, fluid may accumulate not only from pharyngeal paralysis but because of bronchial or pulmonary inflammation or pulmonary edema.

Indications 6 and 7 are probably signs of serious anoxia and carbon dioxide accumulation with approach to the critical point of irreversibility.

Uncooperativeness, while it may be a matter of temperament, is in our experience much oftener an important sign of anoxia, which makes it all the more important to help the patient in spite of himself.

In doubtful cases, tracheotomy is in our opinion a much safer procedure than waiting; the procedure makes it much easier and more certain to clear the airway and keep it cleared. For that reason we believe tracheotomy should be performed oftener, not less often, when the attending team has had little experience with the disease.

THE RESPIRATOR

It has been stated authoritatively and repeatedly [21] that use of the respirator is usually contraindicated and may be dangerous in bulbar poliomyelitis. To the contrary we have found here almost its greatest usefulness, without danger if a clear airway is insured. It is easy to see that, if the upper airway is filled with viscid secretion and suction is made below it by a normal or mechanical respiratory mechanism, the air column will tend to push ahead of it a movable diaphragm of viscid secretion, though some air may bubble through. It is evident that such a procedure might easily drown a patient in his own secretion.

It should be equally clear that if such secretion is kept removed by postural drainage and especially if an accumulation over the larynx is short circuited by tracheotomy so that changes in air pressure are equalized within and without the area of ventilation no fluid will be drawn in (fig. 1). The immediate relief of such patients, the easy adaptation to the rhythm of the machine and the grateful rest which they then enjoy offer excellent proof of this.

Bulbar patients may need a respirator for several reasons. Occasionally we have seen a primarily spinal type of paralysis spread up to involve the medullary center. Our experience has indicated, however, that most often the medullary center is depressed by anoxia and carbon dioxide and that the depression may have become rather profound before the anoxic factor is recognized and corrected. There is usually also a considerable degree of exhaustion by the time action is taken, in part simply because of the muscular effort involved against secretory obstruction but also on the mental and nervous side by the conflict between reflex and voluntary mechanisms striving to ventilate the lungs, yet at the same time attempting to prevent the aspiration of secretion. Again the fact that in the serious cases here reported relief was rather rapid on clearing the airway and instituting use of the respirator indicates that anoxia and not virus infection of centers was the chief factor.

We have found it possible to perform tracheotomy in an opened respirator while oxygen from a bag was insufflated through an endotracheal tube, but surgical intervention should seldom be delayed until such a procedure becomes necessary. This procedure is facilitated by the use of the Monaghan collarless respirator.[29]

Also the respirator may, if the medullary center is out, tide over the patient during the difficult switchback from control of respiration through the chemoreceptors, effective under hypoxia, to a recovered medullary center which will normally respond to carbon dioxide and changes in hydrogen ion concentration.

The treatment which has been outlined may be employed in other conditions with the same manifestations of respiratory difficulty and secretional obstruction. It has been used successfully at the Evanston Hospital combined with curarization in severe tetanus [30] and in a patient with presumed myasthenia gravis under treatment with neostigmine in whom there developed spasm, fluid accumulation and coma, apparently from anoxia.

SUMMARY

1. We believe that anoxia and carbon dioxide accumulation due to difficulty in swallowing, with secretional obstruction, are responsible for most severe central effects in bulbar poliomyelitis.

2. Treatment designed to clear the airway and relieve obstruction has been successful in 15 consecutive cases of bulbar poliomyelitis in this series.

3. Such results should not be exceptional in bulbar poliomyelitis.

4. A physician trained in the recognition and treatment of respiratory obstruction is an essential member of the poliomyelitis team.

ABSTRACT OF DISCUSSION

Dr. Albert G. Bower, Pasadena, Calif.: Poliomyelitis struck hard in Los Angeles County during 1948 with 3,165 patients, of which 3,089 were hospitalized in the Contagious Disease Hospital on my service; 603 cases showed bulbar involvement. Including the cases of the previous two years, a total of 783 patients with the bulbar type were treated, from a total poliomyelitis load of 4,774 patients. Following the lead of Dr. Galloway in 1943 and of the Minneapolis group three years later, we cautiously performed a few tracheotomies in 1946, usually as a desperate final gesture, for the conservative members of the staff for the most part disapproved. Some patients died, some responded slowly but eventually recovered and some improved dramatically, but there was a higher proportion of survivals by far than in similar types of patients in the past. In 1947 we increased our experience, so that by 1948, 233 tracheotomies were performed in a group of 284 patients with evidence of obstruction to a free airway. The tracheotomies were performed earlier and earlier in an attempt to prevent anoxia. Indeed, a slogan for the treatment became, "Prevent Anoxia!"

Lack of oxygen should be corrected immediately, but prevention of anoxia is far better. Its etiologic basis generally fits the patterns described by Dr. Galloway, but paralysis as well as resistance to movement on the part of tight muscles, so characteristic in this disease, of themselves at times decidedly limit respiratory excursion. Hot compresses of light material and judicious doses of curare afford great help in selected cases. Anoxia may result from edema constantly present in the cord and brain but also from involvement of the cortex by invasion of the virus. We have seen well oxygenated patients with correct acid-base balances, with adequate serum proteins and properly maintained albumin-globulin ratios, continue to present typical encephalitic involvement. Reference to the electrolytes and loss of serum proteins, with changes in the albumin-globulin ratio, is important. In respirator-treated patients, these values are usually thrown out of balance. The sicker the patient, the greater the imbalance, and neither the respirator and its accessories nor tracheotomy will save these patients unless these other factors are sufficiently restored to normal to permit immediate survival. After tracheotomy, give oxygen, oxygen and helium or air through the tracheotomy tube. Inasmuch as this tube itself reduces the lumen of the trachea, always use the largest compatible size. The practical points are: do not allow the tube to ride on the bifurcation of the trachea in a child; cut it off short if necessary.

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[30] Turner, V. T., and Galloway, T. C.: Tetanus Treated as a Respiratory Problem, Arch. Surg. 58:478 (April) 1949.

Dr. F. R. Klenner, Reidsville, N. C.: It might be interesting to learn how poliomyelitis was treated in Reidsville, N. C., during the 1948 epidemic. In the past seven years, virus infections have been treated and cured in a period of seventy-two hours by the employment of massive frequent injections of ascorbic acid, or vitamin C. I belive that if vitamin C in these massive doses—6,000 to 20,000 mg. in a twenty-four hour period —is given to these patients with poliomyelitis none will be paralyzed and there will be no further maiming or epidemics of poliomyelitis.

Dr. Joe R. Brown, Minneapolis: We agree in Minneapolis as to the extreme importance of anoxia and maintenance of adequate airway in poliomyelitis; however, we disagree in part with Dr. Galloway. We have seen cases showing definite and severe inflammatory involvement of the respiratory center and the circulatory center in the medulla. These cases have been studied histologically and have been reported in the literature. From 1946 to 1948, we saw 318 cases of bulbar poliomyelitis with a mortality of 34.2 per cent, in spite of every effort made on our part to maintain an open airway. Analysis of the mortality statistics revealed that among those with pure cranial nerve involvement the mortality was 5.6 per cent. These patients died as a result of obstructed airway either because of inadequate time (the patient being admitted in extremis) or inadequate judgment on our part as to when to perform a tracheotomy. Of those with involvement of the respiratory center proved pathologically as well as clinically, there was a 70 per cent mortality. In those with involvement of the circulatory center, also proved histologically, the mortality rate was 85 per cent. In those patients with relatively pure encephalitic symptoms, the mortality rate was 0.3 per cent. In those who suffered from involvement of the bulb combined with involvement of the diaphragm and intercostals, the mortality rate was 54 per cent. I studied particularly 30 recent fatal cases in which 13 of the deaths were due to circulatory failure, 6 to central respiratory failure, 6 to an obstructed airway and 5 to massive atelectasis. I wish to emphasize the importance of pulmonary edema as occurring in many cases of bulbar poliomyelitis. Omission of consideration of these other factors is a dangerous oversimplification of the treatment problem.

Dr. W. Allen Conroy, Chicago: I am an anesthesiologist; my greatest enemy is cerebral hypoxia, and I want to support Dr. Galloway's contention that the error most often made in the treatment of respiratory disorders is failure to provide an adequate airway. It would be better to perform a few superfluous tracheotomies than to miss those which need to be done. The procedure becomes even more important if curare is given for spasm. The patient who is properly curarized is in even greater danger of obstruction from the collapsed throat. He needs even more help from the respirator. Many symptoms of damage to the vital centers that have been attributed to the virus are due to the initial hypoxia suffered by the patient before the physician treats him. Many times I have been called on to place an intratracheal tube to provide relief of obstruction. The results being so dramatic, it then became difficult to convince the laryngologist that he should perform a tracheotomy. I would warn all physicians that such temporary help should be anticipated from an anesthetist or from a laryngologist, but the physician should not be deceived by this temporary improvement. If placing the tube resulted in improvement for the few minutes, the patient had better have a tracheotomy, because the endotracheal tube cannot be left in indefinitely. In managing the tracheotomy tube, use a jacket respirator that does not cover the neck or put in a tube that is flexible and that will reach up to the collar. I plead for the use of tracheotomy in any condition in which the swallowing of mucus is impaired, such as in esophagectomies or in compression lesions of the upper cervical cord, in which the patient cannot cough.

Dr. George J. Boines, Wilmington, Del.: Anoxia in bulbar poliomyelitis is not due entirely to reduced oxygen or diminished air intake resulting from obstruction to the airway by the patient's secretions. Anoxia may be due in part to the following: 1. Neuromuscular shock produced by the generalized virus infection. 2. Psychologic shock in a patient "scared to death" when he realizes he has poliomyelitis. 3. Malnutrition resulting from vomiting, inability to swallow and toxemia. 4. Dehydration produced by the fever and vomiting. 5. Increased viscosity of the blood due to extravasation of fluids into the capillary bed and to increased coagulability of the red blood cells, called blood sludging, as observed and described by Drs. M. H. Knisely and E. H. Bloch of Chicago. Intravenous fluids and blood transfusions counteract this condition. 6. Another important cause of anoxia is reduced vital capacity of the chest caused by muscle spasm, particularly prominent in the posterior neck muscles and causing hyperextension of the neck. This position makes it mechanically difficult for the patient to breathe freely. Also, spasm in the intercostal muscles and diaphragm keeps the chest in the state of inspiration, producing the so-called frozen chest, so that free exchange of air is greatly diminished by difficulty in expiration. The most effective way to correct this condition of muscle spasm is by intramuscular injection of d-tubocurarine (intocostrin®), according to the method originally described by Dr. Nicholas Ransohoff. Since 1946 we have employed d-tubocurarine in over 300 patients, including many with bulbar involvement. The relaxation that is produced is rapid and safe. The bulbar patient is kept in the oxygen tent in the postural drainage position; careful suction of the throat is carried out by the nurse, who is in constant attendance. Early diagnosis and hospitalization are far more important in bulbar poliomyelitis than is tracheotomy. Tracheotomy may be needed in the occasional patient who has complete paralysis of the vocal cord, but this rare. Tracheotomy adds the disadvantage of a smaller air intake, which must be kept constantly clean and free from pulmonary secretions. The operation and tube add to the discomfort of the patient, whose strength is already badly depleted. In the 1947 and 1948 epidemics in Delaware about 250 patients were treated in our clinic; we had 20 patients with severe bulbar involvement who recovered completely without tracheotomy. We used oxygen, postural drainage, intravenous dextrose, blood transfusions, vitamins, penicillin, d-tubocurarine and early ambulation. The respirator was not used.

Dr. Martin H. Seifert, Wilmette, Ill.: Dr. Bower expressed our own dilemma from 1943 to 1946 in making ourselves believe that we should do tracheotomy earlier. We have not had too much trouble with acid-base balance. If there is an error, it is in too much negative pressure and too rapid a rate in the respirator. Patients can drown from vomitus. We do not feed them anything by mouth until the gag reflex returns. We have also observed the histologic proof of involvement of the respiratory center and cardiovascular center to which Dr. Brown referred. It seems that the statement should be modified by saying that these are the results of virus infection plus hypoxia, because hypoxia has been found to produce about the same picture. Dr. Galloway and I are pleading for a change from the fatalistic attitude that bulbar poliomyelitis is an overwhelming infection of the brain stem with no possibility of remedial treatment. I have seen and taken care of patients with poliomyelitis for eighteen years. Patients with bulbar poliomyelitis of the same type that we have seen in the last two and a half years have died under my care before this. It took a supervising nurse and a laryngologist to teach me that there was something to do about bulbar poliomyelitis. What we are trying to say in this paper is, first, secretional obstruction secondary to difficulty in swallowing kills the patient, as a rule; second, constant nursing care, which is expensive and sometimes objected to by those who pay for that care, is also life saving; third, in patients with paralysis of the swallowing mechanism, postural drainage should start at home and should be adequate; fourth, constant suction with meticulous attention to detail plus mechanical suction for emergency use is essential; fifth, with adequate clearing of the airway, I plead for the use of the respirator if respiratory failure occurs in bulbar poliomyelitis. I have used it for nine years and have seen no harm from its use in bulbar poliomyelitis; sixth, when these procedures do not suffice to keep the airway clear, perform a tracheotomy before the patient is near death; seventh, include a laryngologist in the poliomyelitis team in every hospital. He is best qualified to help with the problem of respiratory obstruction. The anesthesiologist also should be immediately available.

ANESTHESIA AND THE ROLE OF ANESTHESIOLOGISTS OF TODAY

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It is in no boastful spirit and it is without exaggeration that we venture to claim that the tremendous advances in surgery in recent years parallel directly the advances in anesthesia and the care of patients before and after operation. The development of new methods and new agents and the constantly increasing knowledge of human physiology have made many modern surgical procedures not only possible but practicable.

STUDIES PRIOR TO ANESTHESIA

When a patient comes to the hospital prepared to undergo surgical intervention, a careful history and physical examination will normally be adequate in the assessment of his physical status. Some of the simpler laboratory investigations are considered necessary. If the surgical or anesthetic procedure which is contemplated is likely to place undue stress on the patient, it is necessary to conduct investigations in greater detail. These, with the newer methods, are valuable in estimating a patient's tolerance to the stress and strain of operation.

The Hematocrit Reading.—The value of hematocrit, previously considered only if low, is now realized to have considerable significance if it is raised above the normal figure.[1] The higher the hematocrit, the more viscid is the patient's blood and the harder does the heart have to work to maintain an adequate output. Plethoric patients who have suffused conjunctivas and an elevated hematocrit may exhibit a slightly cyanotic tinge to the lips and in the nail beds. Many suffer from exertional dyspnea and some degree of orthopnea. This picture is typical of the polycythemic patient. These signs and symptoms are to be considered danger signals. It is believed that patients who have a hematocrit over 50 are not suitable subjects for general anesthesia. The possibility of cardiac failure following increased strain placed on the cardiovascular system by operation and anesthesia cannot be excluded. If general anesthesia is induced, such patients will exhibit a capelike area of cyanosis covering the head, neck and shoulders, which will persist in spite of a high concentration of oxygen in the anesthetic mixture and in the presence of a perfectly clear airway. Venesection with administration of fluids intravenously is, under these circumstances, warranted. If these methods fail to produce improvement, operation should be postponed except in the presence of an acute surgical emergency. Experience has shown that, when time is the essence and the degree of surgical emergency does not permit complete preparation of the patient for operation, regional or spinal anesthesia is to be preferred. Operative hazards can be minimized, and during the immediate postoperative period adequate measures may be undertaken to prevent venous thrombosis.

Blood and Plasma Volume.—When time permits and in order to avoid disaster during operation or the occurrence of cardiovascular accidents during the postoperative period, elucidation of the causes involved in alteration of the value for hematocrit should be complete. Studies of blood and plasma volume, including values for total circulating protein, will be more informative than a hematocrit, red blood cell count or single determination of the value for plasma protein. Deficiencies or excesses may be recognized, and it is thus possible to recommend the optimal replacement or withdrawal therapy. Chronically ill and emaciated patients are frequently observed to have diminished volumes of plasma and red blood cells. This may result in a normal hematocrit and normal concentration of plasma protein, when the latter is expressed in grams per hundred cubic centimeters. This leads to the erroneous concept that the patient's circulating fluid balance and nutritive state are satisfactory. Studies of blood volume, however, will reveal the true status of such patients. Restoration of the needed elements will improve their ability to withstand surgical and anesthetic procedures. Patients who have simple dehydration, rapidly induced, will have a low plasma volume with a high hematocrit. If the value for total plasma protein is normal, they may be treated by the administration of fluids alone. If the plasma protein is low, it is wiser to treat them by administration of plasma. In the presence of anemia and an elevated value for the plasma volume, the administration of washed red cells or whole blood (once again depending on the value for total plasma protein) is indicated. Polycythemic patients, in spite of having a plasma volume that either is increased or is at the higher limit of normal, will benefit by venesection. If not more than 500 cc. of blood is withdrawn daily, it is not necessary to give fluids intravenously, though the patients should be encouraged to take fluids by mouth. Because their total plasma protein is usually normal and because they have the ability to draw on protein reserves in the presence of plasma dilution, daily vene-

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Read in the Symposium on Modern Developments in Surgery in the General Scientific Meetings at the Ninety-Eight Annual Meeting of the American Medical Association, Atlantic City, N. J., June 7, 1949.

[1] Barbour, C. M., Jr.: Polycythemia in Relation to Anesthesia, read before the Annual Meeting of the American Society of Anesthesiologists, Inc., Nov. 4, 1948; to be published.

section is justifiable. The blood may be banked and subsequently returned to the same patient during operative intervention, should the need arise.

Evaluation of Pulmonary Function.—Ideally, every patient should have a roentgenogram of the chest preoperatively to exclude the presence of pulmonary disease. Evaluation of each patient's pulmonary function is of equal importance. It has been customary in the past to consider a patient's vital capacity as a satisfactory guide to his ability to withstand operation and anesthesia. We have learned from recent studies by Cournand and Richards[2] and Rayl[3] that this is a totally inadequate and possibly misleading guide to a patient's true status in regard to pulmonary function. It is recognized that pulmonary function may be divided into two components, ventilation and respiration. Ventilation consists of the gross movement of air or gases into and out of the lungs. The action is mechanical, and the symptom of insufficient ventilation is dyspnea. Respiration consists of gaseous interchange of oxygen, carbon dioxide and nitrogen. The pulmonary alveoli are largely involved in this physical-chemical process, and the symptom of respiratory insufficiency is cyanosis. The two segments of pulmonary function are closely interrelated. In the presence of respiratory insufficiency the respiratory center is stimulated. If the center is rendered inactive by trauma or anesthesia the carotid mechanism may take over to reestablish oxygenation. Dyspnea (ventilatory insufficiency) when pronounced and prolonged, while the patient is at rest, leads to cyanosis. In the majority of patients preoperative evaluation of pulmonary sufficiency may be gaged by determining ventilatory function alone. Relatively simple tests have been developed for this purpose.

Maximum Breathing Capacity: Maximum breathing capacity is the maximum volume of air that can be ventilated in one minute expressed in liters per minute, whereas vital capacity is determined by the volume of one breath without regard to any time factor. Maximum breathing capacity, therefore, has proved to be a much more dependable test. The normal value for the average woman is 100 liters per minute and for the average man, 150 liters per minute. The test is made by having a patient breathe as rapidly and as deeply as possible for one-half minute through a high velocity respiratory valve. The air is collected in a Douglas bag and is subsequently measured by expressing it from the bag through a gas meter calibrated in liters.

Walking Ventilation: Walking ventilation, first described by Warring,[4] is a test for ventilation under stress. The patient is walked 180 feet per minute for four minutes. The exhaled air collected during the last three minutes of the test is measured by emptying the Douglas bag through the gas meter. The normal range is from 8 to 30 liters per minute. When the walking ventilation exceeds 50 per cent of maximum breathing capacity dyspnea will appear under minimal stress. Pulmonary efficiency is materially impaired, and administration of an anesthetic for a major surgical procedure will be hazardous.

Breath Holding: Breath holding parallels the efficiency of the alveolar membrane and indicates the patient's tolerance to oxygen deficiency. Because the test is subject to wide individual variation it is considered of relatively minor significance, but it adds to the sum total of knowledge regarding pulmonary efficiency.

Fluoroscopy: Fluoroscopy is of vastly greater importance. In experienced hands, differential estimation of diaphragmatic and costal motion gives valuable information in regard to the pulmonary function of one lung compared to the other. In addition to this information, fluoroscopy reveals air trapping. Diminished clouding of shadows on the involved side occurs during forced expiration. The heart and mediastinum may shift toward the opposite side. This evidence is of significance in the presence of emphysema, overdistention or bronchial stenosis. A concrete example is worthy of mention:

> A man aged 57 with a history of emphysema was found to have a neoplastic lesion of the lower lobe of his right lung. It seemed to be in a favorable position for operative removal, but the question whether he was operable arose. On the basis of clinical evaluation it seemed doubtful; yet no one relished the idea of making the decision. He was put through a series of tests with the following results: By fluoroscopy, rib motion was found to be 50 per cent on the right and 75 per cent on the left. Diaphragmatic motion was 50 per cent on the right and 75 per cent on the left with an evaluation, therefore, of total motion of 250 of a possible 400. In addition there was appreciable trapping of air in the lower lobe of the right lung distal to the lesion and moderate trapping in the lower lobe of the left lung. Ventilatory motion on the right equalled 40 per cent ($\frac{50 + 50}{250} \times 100 = 40$), whereas usually the right lung is responsible for 53 per cent of ventilatory motion in a normal subject. His maximum breathing capacity was 37 liters per minute (normal 120 liters), whereas his walking ventilation was 20 liters per minute and therefore in excess of 50 per cent of his maximum breathing capacity. On the basis of these calculations it was decided that the man could not tolerate general anesthesia for a major surgical procedure and, if he did, that subsequent to operation he would be a bedridden respiratory cripple. He was advised to forego surgical treatment because the data confirmed the clinical evaluation.

Differential Bronchospirometry: A final test—differential bronchospirometry—may be undertaken to reveal minute ventilation, oxygen absorption and vital capacity in each lung. Highly specialized equipment is required. The test is strenuous for the patient and should seldom be required for clinical evaluation, although the method will continue to be useful in research and in critical evaluation of selected patients.

With the results of these tests available for study, operability in the presence of emphysema, or of emphysema and a neoplasm involving a lung, may be established. The surgeon can avoid the production of respiratory cripples, and the anesthesiologist can be guided in the choice of anesthetic agents and in methods of their administration. The occurrence of dyspnea as a forerunner of cyanosis will be of added significance. He will be able to keep the surgeon informed of the status of the patient during operation in relation to known base lines established preoperatively. It is hoped that new mechanical aids will come into common use to aid in these minute-to-minute evaluations.

Maintenance of Collateral Respiration: Recent researches in respiratory physiology conducted by Alley and Lindskog[5] have shown that collateral respiration may play a part in reducing the incidence of postoperative atelectasis. Collateral respiration is maintained through the pores of Kohn (pulmonary alveolar vents). Alveoli in a lobule whose bronchiole is blocked by a plug of mucus may remain aerated by diffusion of air through the pores from adjacent lobules. Release of histamine into the circulation may be a cause of edema with blockage of these small openings, thus preventing any collateral respiration. Curare has been incriminated as causing release of histamine or histamine-like substances which in turn produce postoperative atelectasis. This work explains the cause of and the sometimes otherwise unexplainable occurrence of atelectasis.

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[2] Cournand, A., and Richards, D. W., Jr.: Pulmonary Insufficiency: I. Discussion of a Physiological Classification and Presentation of Clinical Tests, Am. Rev. Tuberc. **44**: *26, 1941.*

[3] Rayl, D. F.: The Effect of Thoracic Surgical Procedures upon Pulmonary Function, to be published.

[4] Warring, F. C., Jr.: Ventilatory Function, Am. Rev. Tuberc. **40**: 432, 1945.

[5] Alley, R. D., and Lindskog, G. E.: Pharmacologic Factors Influencing Collateral Respiration: Possible Relation to the Etiology of Pulmonary Complications, Ann. Surg. **128**: 497, 1948.

Control of this problem of collateral respiration may be achieved through the preoperative use of antihistaminic agents. Oral administration of diphenhydramine (benadryl®) hydrochloride or tripelennamine (pyribenzamine®) hydrochloride preoperatively may prevent the action of histamine affecting the pulmonary alveolar vents. The drugs may minimize spasm within the lower respiratory tract and cyanosis with consequent cardiac inefficiency, effects associated with the use of d-tubocurarine and cyclopropane. Supplementary diphenhydramine hydrochloride may be given intravenously during a prolonged operation, but this agent is not so effective in the presence of histamine that has already been released. The use of tripelennamine hydrochloride intravenously is not advised because of its uncertain effect on the blood pressure. In addition to their antihistaminic effect these drugs have a sedative action. They potentiate the action of barbiturates; further, they have a local anesthetic action which has not yet been fully investigated. The antihistaminics may well assume a prominent place in anesthesia of the future.

Evaluation of Cardiac Function.—Electrocardiographic Data: Having satisfied oneself regarding a patient's pulmonary function, the next step is to determine cardiac function. A preoperative electrocardiographic tracing is always valuable, and it is particularly so for patients giving a history of cardiac dysfunction. Old cardiac infarcts will give signs of their presence. The position of the pacemaker may be established, and degrees of cardiac irritability may be recognized. However, the electrocardiogram is not a sensitive method of evaluating cardiovascular function. Recent preliminary studies at Hartford Hospital employing the electronic heart sound meter developed by Foulger and associates[6] have revealed variations in cardiac output and particularly in total peripheral resistance in anesthetized patients. These observations may be of importance in assessing the condition of patients before, during and after the administration of anesthetics. Preliminary data seem to indicate that an important problem in anesthesia will be development of ways and means to maintain total peripheral resistance within normal limits. This work is continuing.

ADMINISTRATION OF THE ANESTHETIC

Indications for Preliminary Medication.—It is advisable that all patients who are about to undergo major intrathoracic surgical procedures, where reflexes involving the heart may be overactively stimulated, have an electrocardiogram recorded preoperatively. Agents are known which reduce cardiac irritability, and the anesthetist should be forewarned to employ them preoperatively and prophylactically during operation, otherwise even drastic methods of resuscitation may be of no avail should cardiovascular collapse occur. One does not need to stress the importance of atropine and scopolamine as agents for preliminary medication. Atropine is frequently to be preferred. The objective is to avoid production of excess mucus and at the same time to protect against occurrence of untoward vagus reflexes. Provision for sedation without depression of the vital centers is essential. For this purpose meperidine (demerol®) has proved efficacious. It is a satisfactory substitute in those persons who are sensitive to morphine. The over-all intent is to allay apprehension and fear and thus to minimize the production of epinephrine, which predisposes the heart to a rapid rate and irregular rhythm.

Avoidance of Cardic [illegible]—All anesthetic agents are capable of [illegible] irregularities, though nitrous oxide (in the absence of hypoxia) and ether are rightly regarded as the safest of all agents. The irregularities which are induced may range from an occasional extra systole to ventricular fibrillation. The latter until recently has been regarded as invariably fatal, but there are now well authenticated records[7] of recovery from this complication in cases in which appropriate treatment has been employed. Cyclopropane is responsible for the greatest number of these irregularities, but its virtue of potency, enabling it to be used with a high percentage of oxygen, and its freedom from irritability to the respiratory tract tend to make it the agent of choice for many operative procedures. Administration of quinidine twenty-four hours preoperatively, followed by a therapeutic dose one hour preoperatively, is claimed to protect patients from dangerous cardiac irregularities. Because quinidine sulfate may render a susceptible heart more irritable, thus predisposing it to ventricular fibrillation, it use should be undertaken cautiously. It has been found that during operation the addition of a small amount of ether to the anesthetic mixture will frequently cause the disappearance of cardiac irregularities that are present. The nature of this dampening effect of ether is unknown, but its action may be directly on the cardiac musculature. If the addition of ether to the mixture is undesirable or has proved ineffectual we then resort to other measures. Atropine given intravenously may immediately control cardiac irregularities by its blocking effect on the vagus nerve. Another agent at our command is procaine hydrochloride administered by the intravenous route. Five cubic centimeters of solution in 1 per cent concentration or 10 cc. of a 0.5 per cent concentration may be given rapidly to effect a return to normal rhythm. This is not advocated unless the patient is under general anesthesia. In the presence of cardiovascular collapse administration of procaine is a worth while procedure prior to making an incision in order to begin cardiac massage.

Protective Administration of Procaine.—Patients who are known or suspected to be suffering from heart disease with or without disturbance of rhythm may be protected from the deleterious effects of cyclopropane by the administration of procaine hydrochloride intravenously in the form of a continuous intravenous instillation throughout the operative procedure. One gram of procaine hydrochloride per hour may be given, using isotonic sodium chloride solution which contains the drug in from 0.2 to 0.5 per cent concentration. It is also used to depress vagus reflexes in patients undergoing major intrathoracic procedures, either cardiac or pulmonary. In these circumstances reflexes are less apt to be induced by the surgeon working in the neighborhood of the pericardium, roots of the great vessels or pulmonary hilum. Beck [8] and others have reported on the use of the drug to infiltrate the region of the hilum during pneumonectomy or lobectomy. By the instillation of procaine hydrochloride into the pericardial sac during major cardiac procedures untoward reflexes may be obtunded.

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[6] Foulger, J. H.; Smith, P. E., Jr., and Fleming, A. J.: Cardiac Vibrational Intensity and Cardiac Output, Am. Heart J. **35**: 953, 1948.

[7] Lampson, R. S.; Schafer, W. C., and Lincoln, J. R.: Acute Circulatory Arrest from Ventricular Fibrillation for Twenty-Seven Minutes, with Complete Recovery, J. A. M. A. **137**: 1575 (Aug. 28) 1948.

The Balanced Form of Anesthesia.—There has been an increasing tendency in recent years to use a balanced form of anesthesia. We no longer seek to rely on a single agent, endeavoring instead to achieve a harmonious balance which will produce the most satisfactory results for both surgeon and patient. One example of this is the use of thiopental sodium (pentothal sodium®) in 0.2 per cent solution by continuous intravenous drip to provide sedation during spinal anesthesia. Many patients express a desire to be asleep during their operation. A spinal anesthetic will provide satisfactory operative conditions for the surgeon. This combination will satisfy both. It prevents psychic trauma that the patient might suffer during operation and allows the surgeon, if necessary, to discuss the patient's condition freely. However, it should be emphasized that the patient is maintained in a light sleep and can usually be awakened easily. The nausea and vomiting that may accompany spinal anesthesia and may be occasioned by traction on the mesentery are prevented by this method. With elimination of nausea, drastic reduction of blood pressure is less likely to occur. If supplementary general anesthesia eventually proves necessary to provide relaxation, the transition from a light sleep to full anesthesia can easily be accomplished.

Combined Methods of Anesthesia.—Mention has been made of the intravenous administration of procaine to protect the cardiac mechanism. It has also been used in 1 per cent concentration to produce anesthesia in conjunction with thiopental administered through another vein. Fraser [9] has suggested a formula for mixing the two without precipitation. This combination has proved satisfactory for endoscopic procedures such as bronchoscopy or laryngoscopy. Preceding establishment of general anesthesia it is wise to anesthetize the larynx by topical application of cocaine hydrochloride or tetracaine hydrochloride in each pyriform fossa. Excellent suppression of the cough reflex and adequate relaxation of the masseter muscles are achieved by these combined methods. It is necessary to carefully balance the dose of procaine and thiopental. If too much procaine is given peripheral cyanosis in the nail beds will appear, and administration of oxygen fails to immediately rectify the situation. If too much thiopental is given respiratory depression will occur and the administration of oxygen will be necessary. Curare has been administered with thiopental for these same examinations but with less satisfaction, because these drugs combine to produce respiratory depression and the curare also may be responsible for bronchospasm. The method of using procaine and thiopental has been employed for production of anesthesia for thoracoplasty. Where the aerating surface of the lungs is seriously reduced care must be taken to avoid peripheral cyanosis and respiratory depression. It has been found that the administration of nitrous oxide and oxygen in equal concentrations with an adequate rate of flow makes it possible to minimize the dosage of anesthetic agents given intravenously. Patients are able to cough at the termination of the operation, and they awaken in a cooperative mood without the exhibition of respiratory depression, nausea or vomiting.

Rapid Induction of Anesthesia with Curare.—A word must be said about rapid induction of anesthesia, a subject dear to every surgeon. Baird and his co-workers [10] have shown that thiopental and curare form a synergistic combination which, in the absence of any contraindication, may be given intravenously. The mixture contains 5 units of d-tubocurarine and 25 mg. of thiopental sodium in each cubic centimeter of solution. With this combination, induction can be rapid and relaxation will be adequate to permit easy endotracheal intubation. The depth of respiration may be controlled by intermittent manual pressure on the breathing bag. A skilled and experienced anesthesiologist can cope with the bronchospasm that may supervene during induction or after intubation. Tidal exchange must be maintained at an adequate level. Adequate spontaneous respiration must be in evidence before the patient can be safely returned to his room. It is well to avoid the administration of d-tubocurarine for one-half hour prior to completion of the operation. If for any reason ether has been given during the procedure extreme care must be taken to minimize the dosage of curare because of a cumulative and synergistic effect between these two agents. It is true that induction can be rapid, at a price. If the operative time proves to be shorter than contemplated, delayed recovery of adequate spontaneous respiration may necessitate keeping the patient under direct observation in the operating room for a considerable period. Unless the operation is planned to take at least one-half hour the use of curare might well be avoided.

POSTOPERATIVE CARE BY THE ANESTHESIOLOGIST

The Recovery Room.—The field of endeavor of the modern anesthesiologist extends well into the period of postoperative care. His work will be facilitated and the safety of the patient in this most dangerous of periods will be enhanced if a recovery room is maintained on the operating room floor. During World War II recovery wards were maintained for the sickest patients. Frequently patients were not moved to their own ward for two or three days. This system created difficulties in that the nurses had to be specialists in all types of care. There was a tendency toward confusion when surgeons representing several specialties were seeing and ordering for their respective patients in one ward. Economical employment of nursing personnel was effected. Equipment for treatment of emergencies was segregated to that area of the hospital for maximal utilization. In civilian life the advantages of the recovery ward can be retained and its disadvantages eliminated by having every patient routed through the recovery room on the operating floor. The room should be an open one, admitting all classes of patients. One bed or one crib is required for each operating room, to accommodate patients until such time as they have recovered full voluntary control of their protective laryngeal reflexes and their airway. Shock may be treated by administration of appropriate fluids including isotonic sodium chloride solution, dextrose and blood. Nursing care can be provided by one especially trained nurse per four beds, provided that the services of a ward helper and an orderly are available on call. The senior anesthesiologist is available for supervision and consultation. Postoperative intrapharyngeal, endotracheal or endobronchial aspiration can be accomplished when necessary, and oxygen can be administered as required. After the first postoperative dose of sedative has been given, most patients are ready for transportation to their own wards in condition to be self sustaining. Thus, economical employment of personnel is achieved with advantage to the patients in terms of their well-being. The recovery room may be closed by 7 p. m. each day. This is a system that has worked exceedingly well in our experience.

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[8] Beck, C. S.: Chronic Cardiac Compression Produced by Contracture of Extrinsic Scars on the Heart, Mod. Con. Cardiovasc. Dis., 1939, vol. 8, no. 10.

[9] Fraser, R. E., and Kraft, K.: Pentothal—Procaine Analgesia, Anesth. & Analg. **27**: 282, 1948.

[10] Baird, J. W.; Johnson, W. R., and VanBergen, F. H.: Pentothal—Curare Solution: A Preliminary Report and Analysis of Its Use in One Hundred and Sixty Cases, Anesthesiology **9**: 141, 1948.

Postoperative Administration of Drugs.—It is realized that the effective employment of morphine during the postoperative period must be balanced against the hazard of diminished respiratory exchange, atelectasis and addiction. Newer agents of merit are being synthesized and offered for clinical trial. Meperidine (demerol®) gained a place in medicine in that fashion. Methadone is gaining prominence as an agent for oral administration. The racemic form has now been separated into its dextrorotatory and levorotatory components. It has been determined that approximately 80 per cent of effective action resides in the levorotatory form. Its use for the mitigation of intractable pain has been satisfactory, particularly when muscular spasm has been vexatious and debilitating. In the presence of metastatic lesions of the neck the pain of swallowing has been effectively controlled. Patients with inoperable carcinoma have gained weight prior to the onset of the terminal phase of their disease. Patients have demanded continuation of administration of the drug because they got relief without production of nausea or somnolence. Studies of these and other agents of similar potentialities are continuing.

The use of procaine hydrochloride as a postoperative analgesic agent has not been confined to intravenous administration. The anesthesiologist has used his skill in regional anesthesia to perform intercostal block with procaine or procaine-in-oil in the relief of postoperative pain following upper abdominal and major intrathoracic surgical operations. This interruption of the pain pathways is sometimes effective in providing relief long after the effect of the anesthetic agent has worn off. Nerve block—particularly paravertebral—is frequently requested in cases of intractable pain as a diagnostic measure and as a means to estimate the efficacy of contemplated surgical treatment. Lumbar sympathetic block is frequently employed and is combined with cutaneous temperature tests and oscillometric readings in an assessment of the status of patients suffering from vascular insufficiency of the lower limbs and in treatment of thrombophlebitis. Stellate ganglion block is used in the treatment of cerebral vascular accidents or to relieve spasm of the arteries of the upper limb that may follow injuries about the elbow.

STATUS OF THE ANESTHETIST

The various aspects of the anesthesiologist's work which have been presented indicate that he must have a wide knowledge of recent advances in pharmacology; in fact, that he must be a practicing pharmacologist. His interest in the ancillary services of anesthesiology (intravenous therapy, blood transfusion and inhalation therapy) tend to perpetuate this status. This position, which he should be prepared to fill, is a comprehensive one because of his contacts with programs for research carried on by pharmaceutical manufacturers on the one hand and departments of pharmacology in universities on the other. He represents an integrating link in the work of one group of scientists interested in fundamental principles and another group interested in their clinical application.

In the Hospital.—The present day status of anesthesiologists varies considerably in different parts of the country and may vary in separate hospitals in the same city. This lack of a norm for the specialty is due to the influence of many factors. A prime influence is the scarcity of trained personnel in relation to the demand that has developed since World War II. The demand reflects the regard which anesthesiologists won on the basis of services rendered during the conflict. In order to provide the greatest good to the greatest number, some anesthesiologists have accepted salaried positions in hospitals as chiefs of departments in which training of residents is emphasized. The trend has been accentuated by provisions in Blue Cross contracts which cover payment for services rendered by hospital employees only. Because of the type of work undertaken by anesthesiologists their contacts with patients are often nebulous and they remain anonymous. In many instances hospitals have seized on these circumstances to discourage and prevent private practice by the anesthesiologist and thereby to perpetuate an arrangement by which profits of departments of anesthesiology are diverted into the general fund of hospitals to reduce deficits. It is our claim that reduction and elimination of deficits is a responsibility of the citizens served in each community and that it is not the responsibility of one segment of the medical profession. As the demand for professional service grows and the number of trained personnel available grows the hovering cloud of hospital deficit financing becomes more and more ominous in relation to possible improvement in patient care. The chief of a department of anesthesia finds it impossible to attract permanent members to his staff at the salaries he can offer. Medical schools will be justified in continuing to neglect the teaching of fundamentals in anesthesiology because their students will reject selection of a specialty with such a circumscribed future. Rejection will be all the more likely when students realize that in many schools anesthesiology is organized, if at all, as a subsection of the department of surgery. In some centers the chief of anesthesiology is known as an assistant or associate professor of surgery. The department of anesthesia, although working in the closest cooperation with the departments of surgery and medicine, should not be subordinated to either. In the Veterans Administration, although equal financial opportunity is provided, administrative and clinical dictation of the chief surgeon has on occasion made the anesthesiologist's position untenable in certain hospitals. From the legal angle it should be more generally recognized that no two persons may combine or agree to prevent a third, the patient, from holding each of the two equally liable legally for his care, even when their services are rendered at the same time. Dictation by surgeons should be replaced by unhampered consultation, with decisions reached on purely clinical grounds.

In Private Practice.—More and more anesthesiologists are willing and anxious to emulate the example of their medical and surgical confrères by engaging in private practice. The trend is an excellent one that should be fostered: otherwise the thin edge of the wedge of institutionalized and ultimately socialized medicine will be driven deep enough to open a crevasse into which surgeons, obstetricians and internists will fall. The anesthesiologists will be at the bottom to break the fall, but it is doubtful whether our usual efforts at pain relief will be rendered wholeheartedly. Why not face the fact that Blue Cross plans providing medical coverage can and will stall medical progress with devastating effect if payment is made only to hospitals for services rendered by employees? An anesthesiologist, certified by the American Board, recently was forced after nine years of private practice to resign from the staff of a hospital in New Jersey because he refused the demand of the administrator that he accept a full time job on salary. The motive must have been profit for the hospital from medical practice. This is not an isolated incident.

PARALLEL DEVELOPMENT OF ANESTHESIA AND SURGERY

The day is rapidly approaching when physicians will be expected to assume more than clinical responsibility for the hospital in which they work. They may be asked or even forced to assume financial responsibility, but it should not be to the extent that individual citizens or captains of industry are relieved of responsibility for an institution that is an asset to the community as a whole. Where such financial responsibility has been assumed, as it has been in the case of anesthesiologists working on salary, we are entitled to know the extent to which such support is provided and we should get credit for it in the eyes of our confrères. May we emphasize Dr. James R. Miller's admonition[11] in this regard. His position as a member of the Board of Trustees of the American Medical Association lends weight to his well considered opinion that every anesthesiologist should be a member of the professional staff of the hospital and that his relations to the hospital ideally should be on the same footing as those of other members of the staff. When he makes an agreement or renews one with a hospital he should have the benefit of advice and support of a prudential committee of the staff. This committee should consist of three senior influential members. If this committee functions properly the anesthesiologist will be protected and conditions of contract and policies that are established will have the support of members of the staff. This principle might well be applied for pathologists and radiologists also. A unified front within the medical profession could thus be established.

The future of anesthesiology is assured. Surgery has developed to the point where the lesion is no more important than the economy of each patient's organism as a whole. In the measure that operative procedures are assuming greater and greater magnitude the work of the anesthesiologist in maintaining the patient's economy as a whole assumes greater and greater importance. Progress in anesthesiology must continue to parallel that in surgery. It is hoped that more medical schools will recognize these parallels.

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THE CONTROL OF POLYCYTHEMIA BY MARROW INHIBITION

A Ten Year Study on 172 Patients

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Polycythemia vera, first described by Vaquez in 1892[1] and later by Osler,[2] has been considered a fatal disease with a relatively short duration of life after onset, although an unusually long duration has been observed in some cases. Lee states, "The prognosis is inevitably fatal, but it must be remembered that this is a chronic disease, the duration of which varies from several months to many years. In the true form of polycythemia, the usual duration even after diagnosis, which is usually not established for over a year, is a number of years."[3] Symptomatic relief and control of the hematologic picture have been possible in many patients by means of venesections, phenylhydrazine given orally or roentgen irradiation, but there has been reported no large series of patients treated and observed for a long period in which evidence has been presented that there has been satisfactory control of the disease and appreciable lengthening of life.

Richardson and Robbins[4] treated, since 1932, 28 patients with total body roentgen irradiation, and they concluded that their results show that their method of therapy is superior to venesection or phenylhydrazine therapy. In the 12 patients who died, the causes of death were: pulmonary disease not related to the polycythemia (2), carcinoma of the breast (1), uremia due to prostatic obstruction (1), arterial thromboses (6; 3 coronary, 2 cerebral and 1 cerebral, aortic and subclavicular), the primary disease (1) and pulmonary embolism (1). In a series reported by Tinney and his co-workers[5] there was definite evidence that 36 out of 163 patients survived more than five years after onset. Common causes of death have been thromboses[6] in various arteries or veins, hemorrhage, the development of leukemia or anemia and infectious, neoplastic or other intercurrent disease.

In the absence of methods for preventing the disease, one is forced to look for methods of keeping the num-

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Based on a presentation before the annual meeting of the American College of Physicians, San Francisco, April 23, 1948. This work has been supported in part by the Henry Stevens Kiersted Memorial Fund for Medical Research and by the John and Mary R. Markle Foundation. During the past three years the P^{32} used in these studies has been provided by the Atomic Energy Commission.

Various associates during the past ten years have observed and assisted in the care of these patients, particularly Drs. William B. Chew and Wallace Partch, who referred the first 2 patients for treatment, and Dr. B. V. A. Low-Beer; also Drs. Robert Austin, Nathanial Berlin, Ezra Bridge, Bruce Brown, J. W. Carpender, Morris Dailey, R. Lowry Dobson, William G. Donald Jr., Ellsworth Dougherty, Lowell Erf, Anne Goetsch, John Gofman, J. G. Hamilton, Louis Hempelman, Rex Huff, Douglas Lund, Herbert C. Moffitt Jr., Mortimer Moseley, Robert Rosenthal, Enrique Strajman, Louis R. Wasserman, John Weaver and Owen Williams. Drs. E. H. Huffman, Hardin B. Jones, Martin Kamen, E. Lilly, K. G. Scott and C. A. Tobias prepared the P^{32} solutions, and Dr. William J. Kerr lent his interest and support. Finally, the continued interest in and support of this and numerous other biologic and medical investigations in the Radiation Laboratory by Prof. Ernest O. Lawrence have been invaluable.

1. Vaquez, M. H.: Concerning a Special Form of Cyanosis with Accompanying Excessive and Persistent Hyperglobulia, Compt. rend Soc. de biol. **44:** 384, 1892.

2. Osler, W.: Chronic Cyanosis with Polycythemia and Enlarged Spleen: A New Clinical Entity, Am. J. M. Sc. **126:** 187-201, 1903.

3. Lee, R. I.: A Case of Polycythemia Vera or Erythremia, M. Clin. North America **21-24:** 369-374, 1937.

4. Richardson, W., and Robbins, L. L.: The Treatment of Polycythemia Vera by Spray Irradiation, New England J. Med. **238:** 78-83 (Jan. 15) 1948.

5. Tinney, W. S.; Hall, B. E., and Giffin, H. Z.: Prognosis of Polycythemia Vera, Proc. Staff Meet., Mayo Clin. **20:** 306-310 (Aug. 22) 1945.

6. Norman, I. L., and Allen, E. V.: Vascular Complications of Polycythemia, Am. Heart J. **13:** 257-274 (March) 1937.

ber of red blood cells normal or near normal. If this can be done, these patients are usually symptom free, and they may be less susceptible to thrombotic complications. In 1938, after extensive animal and clinical studies with radioactive phosphorus, it was found possible to give nonlethal doses of sodium radiophosphate to animals and cause inhibition of cell production in the marrow.[7] The phosphate containing P^{32} (half-life approximately 2 weeks) localized to a pronounced degree in bone, bone marrow and rapidly growing tissue such as leukemic tissue,[8] and it therefore seemed possible that one might have here a simple method for the inhibition of red cell production in polycythemia vera. Consequently we administered the material to 2 patients with polycythemia vera; their hematologic course since that time is shown in figures 1 and 2. These patients were reported in the original article.[9] The doses given were calculated and extrapolated after extensive experience with the effect of P^{32} on the hematopoietic tissues of animals and human beings.[10] It is seen that in both of these patients the number of red blood cells has been kept at normal or near normal levels with the infrequent use of P^{32} and the symptoms and signs of the disease have likewise been controlled during this period of ten years.

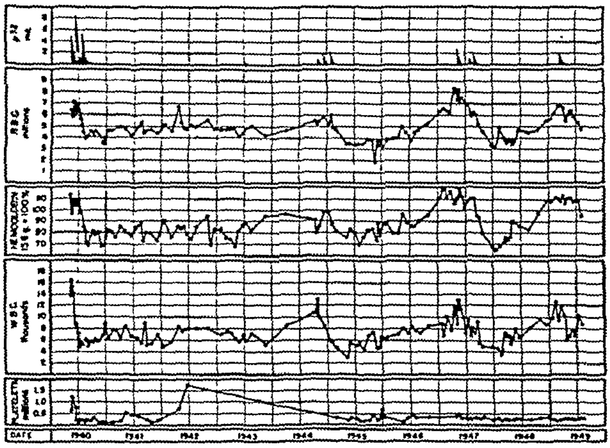

Fig. 1.—Hematologic course in a 42 year old woman with polycythemia vera treated with P^{32}. *The blood picture has been controlled by the infrequent administration of radioactive phosphorus.*

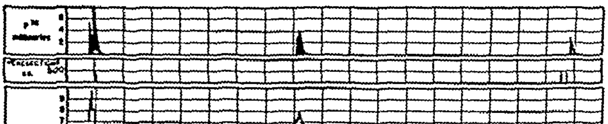

Fig. 2.—Hematologic course in a 57 year old woman with polycythemia vera treated with P^{32}. Figures 1 and 2 refer to the first two patients with polycythemia treated by this method.

Since the treatment of these first 2 patients we have treated in similar fashion 119 more patients suffering from polycythemia vera and have complete follow-up records on 116 of these patients. Figures 3, 4 and 5 are charts showing the hematologic courses in representative patients. Other investigators have confirmed our original observations that the symptoms and signs of the disease can be kept under control[11] with P^{32}, but the present paper is the first attempt to evaluate this new form of therapy with reference to life expectancy or prolongation of life. In the evaluation of any new therapeutic measure, relief of symptoms and signs and prolongation of life are the important criteria.

Since the beginning of this study of polycythemia, we have had the opportunity of carrying out numerous clinical and physiologic studies on 172 patients suffering from polycythemia from various causes; 134 of them had the clinical and laboratory picture of polycythemia vera; 26 of them had mild polycythemia of unknown etiology and 12 had secondary polycythemia, usually associated with cardiac or pulmonary disease. There is no cleancut line between primary polycythemia and secondary polycythemia, although most patients with primary polycythemia do have the classic picture and most patients with secondary polycythemia have an obvious cause for the elevated red count, but there is a group of patients which seems to fall in between in which the question of anoxia arises, and one wonders whether an anoxic stimulus may not be a factor in all cases of polycythemia, whether they be of classic primary polycythemia vera or secondary cases such as those seen with heart and pulmonary disease. In this laboratory

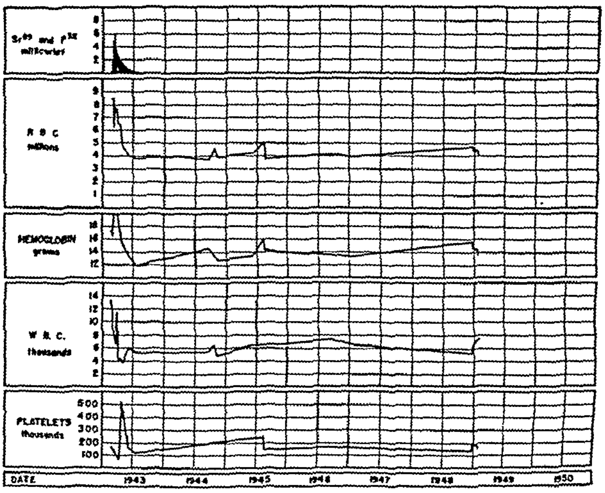

Fig. 3.—Hematologic course in a 58 year old woman with polycythemia vera treated with P^{32}. *A single course of three doses of P^{32} in 1943 has controlled the disease to the present (June 1949).*

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[7] Lawrence, J. H., and Scott, K. G.: Effect of Radio-Phosphorus on Blood of Monkeys, Proc. Soc. Exper. Biol. & Med. **48:** 155-158 (Oct.) 1941.

[8] Lawrence, J. H.; Tuttle, L. W.; Scott, K. G., and Connor, C. L.: S[illegible] he Aid of Radioactive Phosphorus: I. The [illegible] of Normal and Leukemic Mice, J. Clin. Investigation **19:** [illegible] (March) 1940.

[9] Lawrence, J. H.: Nuclear Physics and Therapy: Preliminary Report on a New Method for the Treatment of Leukemia and Polycythemia, Radiology **35:** 51-60 (July) 1940.

[10] Low-Beer, B. V. A.; Lawrence, J. H., and Stone, R. S.: The Therapeutic Use of Artificially Produced Radioactive Substances, Radiology **39:** 573-597 (Nov.) 1942.

[11] (*a*) Warren, S.: The Therapeutic Use of Radioactive Phosphorus, Am. J. M. Sc. **209:** 701-711 (June) 1945. Reinhard, E. H.; Moore, C. V.; Bierbaum, O. S., and Moore, S.: *Radioactive Phosphorus as a* Therapeutic Agent, J. Lab. & Clin. Med. **31:** 107-218 (Feb.) 1946. (*b*) Hall, B. E.: Therapeutic Use of Radiophosphorus in Polycythemia Vera, Leukemia, and Allied Diseases, in The Use of Isotopes in Biology and Medicine, Madison, Wis., University of Wisconsin Press, 1948, p. 353. (*c*) Erf, L. A.: Radiophosphorus As Treatment of Choice in Primary Polycythemia, Am. J. Med. **1:** 362-366 (Oct.) 1946.

we have completed and have in progress numerous physiologic investigations directed toward the answer to this and other questions, which will be reported elsewhere.

The patients with polycythemia vera varied in ages from 19 to 75 years at the time of onset, with an average of 50.7 years (fig. 6). Of these, 56.5 per cent were male and 43.5 per cent female. In the entire group 85.6 per cent had received treatment previously with conventional methods, such as venesections, phenylhydrazine and/or roentgen ray. Palpably enlarged spleens were present in 65 per cent. After therapy the enlarged spleens became smaller or impalpable. Elevated white blood cell counts, above 10,000, were noted in 68 per cent, when first seen by us, and of those having an elevated white blood cell count, 38 per cent had myelocytes or immature white blood cells. This is of interest in view of the known relationship between polycythemia vera and leukemia and the frequent occurrence of leukemia as a complication of polycythemia vera.[12] Of those having immature white blood cells, 69 per cent had received previous therapy (phenylhydrazine, roentgen rays, phlebotomy). After therapy with P^{32}, immature white blood cells were found in only 27 per cent of those originally having immature cells. Five of 121 patients, or about 4 per cent of the total series (5 per cent of the group showing initial elevated white blood cell counts) showed myelocytes in the peripheral blood after P^{32} therapy but not before. In no patient with a normal total white cell count when seen here initially were there myelocytes in the peripheral blood. Thirty-three per cent had an elevated blood pressure, and 35 per cent of these had a fall of their elevated blood pressure after P^{32} therapy. This is interesting in view of the possible relationship of the probably slowed renal blood flow and consequent renal hypoxia.[13] There was a peptic ulcer or a history of it in 11.5 per cent; 14.8 per cent had a thrombotic history.

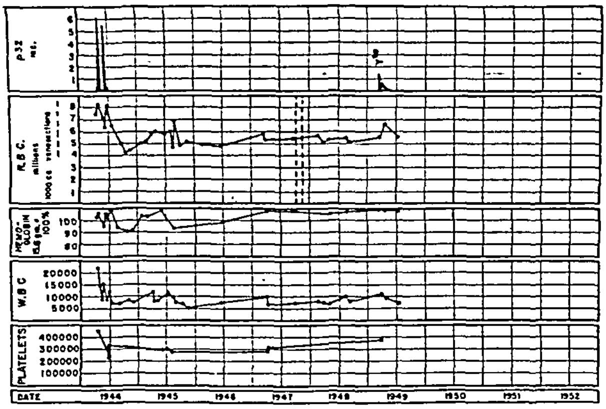

Fig. 4.—Hematologic course in a 47 year old man with polycythemia vera treated with P^{32}. Y^{90} indicates the administration of radioactive yttrium colloid which localizes in the bone marrow, spleen and liver and provides beta irradiation with a half-life of about three days.

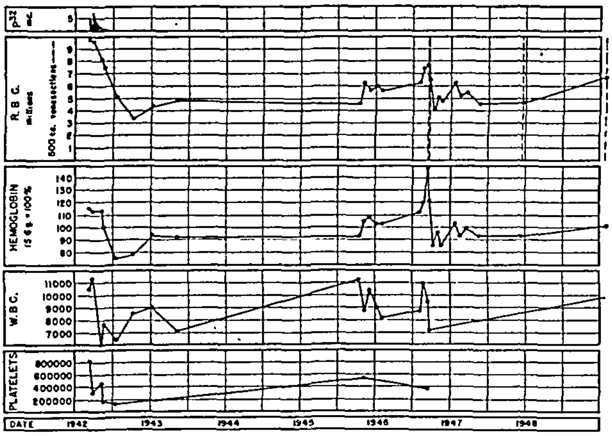

Fig. 5.—Hematologic course in a 53 year old man with polycythemia vera treated with P^{32}. No further P^{32} has been needed since the first course in 1942.

The diagnosis of polycythemia vera was made from the history, physical examination and the laboratory findings, including sternal marrow examination (table) before and after therapy.[14] In connection with the marrow findings, it is interesting that there was an increased nucleated red cell count which returned to near normal or normal after therapy. When necessary, arterial blood oxygen saturation was done to rule out secondary polycythemia,[15] as were special pulmonary

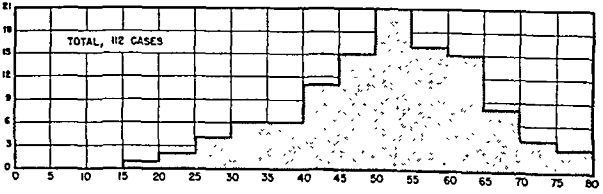

Fig. 6.—Graph showing distribution of 66 male and 46 female patients with polycythemia vera treated with P^{32} according to age at onset (horizontal values). The vertical column of figures at the left shows the number of cases.

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and cardiac studies if indicated. The degree of unexplained polycythemia had to be 7,000,000 or above before the diagnosis was made, unless there was clear-cut evidence of the diagnosis in the past or an enlarged spleen with a definitely elevated red blood cell count. In borderline cases, the red cell mass as determined by P^{32} labeled cells and the measurement of red cell production with Fe^{59} were often helpful in diagnosis.

During 1939, 1940, 1941 and 1942, 30 patients were treated. Since that time this group of patients has received one course (usually two injections of 3 to 6 millicuries) on the average of every three years. In this series of 121 patients treated, 47.8 per cent received only one course of therapy, and, in the first group of 30 treated, 17 per cent had remained normal, at the time of reporting, for over three years after the single course of therapy. In the group treated during the first five years, 28 per cent have had only one course of therapy, some of them not needing retreatment after four, five, six, seven and eight years.

There have been 21 deaths. The causes of death have been: generalized arteriosclerosis (5), leukemia (5), neoplastic disease (3), coronary occlusion (3), cardiac failure (2), portal thrombosis (1), anemia and leukopenia (1) and cerebral thrombosis (1). Excluding the patient with portal thrombosis which had developed prior to our seeing or treating the patient, the average age of death in this series was 67.[16]

It is to be noted that there were 5 deaths associated with leukemia, or about 4 per cent of the treated group. The high incidence of leukemia as a complication of polycythemia vera is well known.[12] As pointed out by Moschcowitz,[12a] the transition of polycythemia vera into leukemia has been reported by many authors. Minot and Buckman,[12b] for example, have reported a series of 15 patients with polycythemia vera, in 3 of whom this complication developed. Likewise, Rosenthal [12c] reported such a case in which no therapy had been given prior to the development of leukemia.[17] Klumpp and Hertig [12d] have reported 5 cases in which myelogenous leukemia occurred as a complication of polycythemia vera. In 3 of these there had been no previous roentgen therapy or any other form of radiation. Hansen-Pruss and Goodman [12e] reported 2 patients with polycythemia vera under treatment with roentgen rays who died with the picture of acute leukemia. Kraus and Schiller [12f] reported a complicating leukemia in a patient with polycythemia vera. The patient had never received any form of radiation. Schoen [12g] has reported the development of leukemia in polycythemia vera apparently before any radiation therapy was given. Tinney, Hall and Giffin [12h] reported in a series of 163 patients with polycythemia vera that 17 per cent of them had a leukemic or leukemoid picture in their blood smears. Since these patients were under observation for a relatively short time and since the entire course of the disease was not completely followed, this figure would undoubtedly be higher if all the patients could have been studied over a period of many years for the development of this complication. During a relatively short period of observation of 14 patients with polycythemia vera by Tischendorf and Herzog,[12i] the complicating picture of myelogenous leukemia developed in 3. Two of these patients apparently had received previous roentgenologic treatment. Stealy and Sumerlin [12j] have written of a patient, untreated by roentgen or any other form of radiation but receiving prolonged treatment with phenylhydrazine, in whom there developed a terminal leukemoid reaction suggestive of leukemia. Hunter [12k] related that a patient with polycythemia vera died ten years after spray irradiation therapy of an acute, myeloblastic leukemia. Reifenstein [12l] has reported a case of polycythemia treated with Fowler's solution which terminated in subleukemic myelosis. In a series reported by Graham [12m] a leukemic picture developed in 24 per cent of the patients. Two cases of polycythemia vera untreated by radiation but with transition to acute myeloblastic leukemia have been reported by Herxheimer [12n] and Jung.[12o]. Hall [11b] reported 4 deaths from acute leukemia in a series of 124 patients treated with radioactive phosphorus but no deaths from acute leukemia during the past three years in an increasingly large series of patients treated with P^{32} (personal communication). McAlpin,[12p] Buchanan,[12q] von Winterfeld,[12r] Zimmermann,[12s] Stone and Woodman [12t] and numerous others have reported similar cases in which leukemia has developed prior to or after therapy with venesections, phenylhydrazine or roentgen ray.

Average Differential Count of Sternal Marrow in 94 Cases of Polycythemia Vera (Pretreatment) and 20 Normal Subjects

	Polycythemia Vera (Percentage)	Normal (Percentage)
Myeloblasts	0 86	2.2
Neutrophil myelocytes	24.0	20.8
Eosinophil myelocytes	0 8	1.6
Basophil myelocytes	0.03	0.04
Nonsegmented polymorphonuclear cells	18.9	24.3
Segmented polymorphonuclear cells	24.7	19.6
Eosinophils	1.0	0 8
Basophils	0.2	0.02
Lymphocytes	3.1	8.9
Monocytes	0.2	0.4
Reticulum	0.3	1.6
Hematogones	1.1	2.8
Megaloblasts	0.3	0.2
Erythroblasts	2.0	1.7
Normoblasts	22.5	15.0

Although there is no evidence of an increase in the complication in our series, this new form of treatment has not caused this serious complication to disappear. A brief analysis of the course of the 5 patients who died with leukemia or "leukemic-like" picture follows.

Patient F. M. died at age 63 after a ten year history of polycythemia. He was first seen by us five years after the onset of his disease. Prior to the beginning of P^{32} therapy, he had been treated by venesections, and on one occasion, two years after the onset of polycythemia, he had a white count of 12,300, the differential showing a few immature forms. When he was first seen by us, the red cells numbered 8,970,000, white cells 27,950, platelets 807,300 and there were 1 per cent

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[16] Since the writing of this paper, there have been 3 more deaths, 1 from circulatory failure following widespread thromboses which had developed prior to P^{32} and 2 from causes unknown, but none from leukemia or the disease itself.

[17] Since this article was written, Dr. N. Rosenthal (personal communication to the author) has observed 7 more patients with polycythemia vera, untreated by any form of radiation, in whom there developed a leukemoid reaction or a leukemia as a complication. Two of these patients had a blood picture indistinguishable from that of chronic myelogenous leukemia. The following are the white cell counts and abnormal white cells in these patients:

Patient	White Cell Count	Abnormal White Cells
1	189,000	25% myelocytes
2	53,600	1% myelocytes and 90% polymorphonuclear cells
3	46,000	94% polymorphonuclear cells
4	40,300	91% polymorphonuclear cells
5	8,500	9% myelocytes
6	60,000	2% myelocytes
7	182,000	25% myelocytes

In our own series of 172 patients, we also have 3 living patients with polycythemia complicated by a blood and marrow picture indistinguishable from chronic myelogenous leukemia (2 cases) and erythroleukemia (1 case). Two of these patients had received no previous roentgen radiation and none had received P^{32}. In the first 2 patients the myelogenous leukemic picture has been under excellent control for several years as the result of P^{32} therapy.

myelocytes in the blood smear. The first course of radioactive phosphorus (six doses totaling 20.3 millicuries) was given over a period of three months. The patient's red cell count returned to normal, and no immature forms were seen in the blood smear during the ensuing year. Then, occasional myelocytes were again observed. During the next four years the patient did well, but during the last two years of his life there was a definite and serious increase in the number of immature white cells. Two years prior to his death six doses of P^{32} totaling 24.4 millicuries were administered. Nine months prior to his death, three doses of P^{32} totaling 2 millicuries were given the patient. A blood count taken just before the patient's death showed 2,740,000 red cells and 68,000 white cells with 8 per cent myelocytes and 80 per cent myeloblasts.

Patient C. H. died at the age of 78 after a fifteen year history of polycythemia. Previous treatment included roentgen ray, phenylhydrazine, Fowler's solution and venesections. His blood picture when first seen by us showed 10,730,000 red blood cells, 17.7 Gm. hemoglobin, 480,000 platelets and 11,000 white blood cells but no abnormal cells. He was given 4.87 millicuries of radioactive phosphorus over a period of three weeks. The red blood cell count, hemoglobin and white blood cell count gradually fell, and no abnormal white cells were found in the blood smear. Approximately eighteen months later, an occasional myelocyte was noted in the blood smear and the red cell count had begun to rise. Six months later the patient was given two doses of 3 millicuries each of P^{32}. Immediately following this therapy the red blood count, hemoglobin, platelet count and white blood count gradually fell. A few weeks before the patient's death the blood picture showed 3,450,000 red cells, 55 per cent (8 Gm.) hemoglobin, 110,000 platelets and 4,000 white blood cells. Two days before his death, the peripheral blood smear showed 2,000,000 red blood cells, 42 per cent hemoglobin and 6,000 white blood cells with 25 per cent blast cells. The patient died with a terminal picture of subacute myelogenous leukemia. A postmortem examination revealed numerous erythroblasts, myeloblasts and megakaryocytes in the bone marrow, and zones of hemopoietic activity in the sinusoids of the liver. The pathologist's interpretation was myelogenous leukemoid reaction.

Patient L. W. died at age 68 of chronic myelogenous leukemia after a history of polycythemia for twelve years. Shortly after the onset of her disease she was treated by roentgen radiation and phenylhydrazine. Eight years later her white blood cell count was around 10,000, and on one occasion 2 per cent myelocytes were noted. Therapy with P^{32} was started nine years after the onset of polycythemia, and during the period of a year three doses totaling 19 millicuries were administered. At one time during this period 3 per cent myelocytes were noted in the blood smear. Six months after the completion of P^{32} therapy, 5 per cent metamyelocytes and 38 per cent myelocytes appeared in the blood smear, but the white cell count at this time was not elevated. The patient's course from this time until her death a little over a year later was steadily downhill with a rapidly developing anemia. Many myelocytes and blast cells terminally were found in the peripheral blood.

Patient M. M. was a man who died at age 62 after an eight year history of polycythemia never controlled by venesections. One year after onset, when he was first seen by us, his blood picture was: red blood cells 9,600,000, hemoglobin 24.8 Gm., platelets 1,190,000, white blood cells 13,050. He was given 7 millicuries of P^{32} followed three weeks later by a second dose of 5 millicuries, and a satisfactory remission resulted. Two and one-half years later 1.18 millicuries of P^{32} were administered because of a rising red cell count and hemoglobin level. A fourth dose of P^{32} (5.35 millicuries) was given six months later when the red cell count rose to over 8,000,000 with 12,000 white cells. At this time, occasional metamyelocytes appeared in the peripheral blood smear. The patient remained in excellent remission for three more years. At the end of that time anemia and leukopenia developed. The blood picture a month before the patient's death was as follows: red cells 2,300,000, hemoglobin 37 per cent (5.92 Gm.), white blood cells 102,400 with many myelocytes and some myeloblasts. The platelets were seriously reduced, and the patient had grown progressively weaker. He died with a terminal subacute myelogenous leukemia. The bone marrow at autopsy showed well defined cellularity with complete replacement by leukemic cells.

Patient C. G. died at age 67, four years after treatment with P^{32} and fifteen years after the onset of polycythemia vera. Previous treatments had included venesections, roentgen radiation and phenylhydrazine. When we first saw her, the red blood cells numbered over 10,000,000, but after a course of P^{32} therapy, these were reduced to normal levels. The patient remained in remission until two years later, when there again developed an elevated red cell count (8,000,000) with approximately 20,000 white cells. No immature white cells were noted in the blood smear. Three doses of radioactive phosphorus totaling 9.98 millicuries were administered, but the red cell count remained around 8,000,000 and the white count around 20,000. One year later the red cell count was over 8,000,000 and the white cell count had risen to 44,000. The patient had two venesections at this time. Rare myelocytes and metamyelocytes began to appear in the blood smear for the first time. The red cells decreased to around 6,000,000. No further P^{32} was given, but the white cell count continued to rise and continued to show rare myelocytes and a high percentage of polymorphonuclear cells until the time of the patient's death.

Thus, in summary, all 5 of these patients had typical polycythemia vera of relatively long duration. Four of them when first seen by us seemed to be candidates for the complication of leukemia because of evidence of a hyperactive marrow, as shown by the presence of young forms in the blood smear, and/or a high white blood cell count and high platelet count. The records of the original white cell counts of the fifth patient (C. G.) were lost.

Thus it appears that there is no significant increase in the incidence of leukemia after P^{32} therapy. Also, the common leukemoid reaction seen at the outset of therapy disappeared in over 70 per cent of the cases after therapy with P^{32}. There is no evidence of the consistent occurrence of other complications which might be related to the treatment. For example, there is no evidence that neoplasms are being induced by this therapy: the three which we observed (carcinoma of head of pancreas, carcinoma of prostate and carcinoma of kidney) occurred soon after the beginning of therapy and probably were related to the normal probability of the development of neoplastic disease in patients in this age group.

Also of interest are the few thromboses observed after P^{32} therapy in this series (4.2 per cent compared to over 25 per cent prior to P^{32}). Hall[11b] found in a series of 124 patients with polycythemia that there was a history of thrombosis in 27 per cent of them, whereas after P^{32} therapy the incidence of thrombosis was only 2.4 per cent. This is probably related to the fact that the red cell mass, platelets and blood viscosity have been kept normal. With the present methods for the control of polycythemia and high incidence of serious thromboses in the past,[18] it cannot be emphasized too strongly that the numbers of the red cells and platelets of these patients should always be kept within normal limits in order to avoid damage to the vascular system. Such control of the red cell mass (as measured by accurate blood volume determinations) can be achieved only by adequate follow-up and frequent observation of all patients after they are treated. This applies particularly to patients in the older age group with high thrombocyte counts. Radiation is especially effective in controlling both of these formed elements of the blood. In this connection, it is of interest to observe that approximately 60 per cent of the patients had high platelet counts. In many of the patients treated with P^{32} the condition was previously uncontrolled by venesections, and some patients treated only by venesections have shown a continued high red cell mass or a continued high red cell count with an abnormally low hemoglobin level after this form of therapy. In young patients with a normal platelet count and no tendency toward thromboses, a trial series of venesections is often performed, and a few patients can be controlled for longer or shorter periods of time in this way. During the early part of our work we did not combine venesections with P^{32}, but during recent years we have occasionally been carrying out a series of venesections prior to P^{32} therapy and in some patients immediately after P^{32}, when we are reluctant to wait several weeks for the P^{32} to take effect. Also, in some instances in which there has been a rise in the number of red cells several years after the first course of P^{32}, infrequent venesections have controlled a previously uncontrollable polycythemia. We have grouped our patients with polycythemia vera according to the method of treatment, as follows: 66 patients treated with P^{32} only; 32 patients treated with P^{32} followed within four months by venesections; 21 patients treated with P^{32} followed more than four months later by venesections; 6 patients treated exclusively by venesections, and 9 patients treated and followed elsewhere. Finally, since patients with polycythemia vera are usually not in the child-bearing age group and since the doses of radiation are extremely small,[19] the possible genetic effects of irradiation on subsequent generations need not be considered.

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Although this series must be extended in number and then followed for many more years, certain comments seem in order. First, the average age of onset of the patients is 50.7 years, and the average age of those patients who died was 67 years. This is nearly a normal life expectancy for persons in this age group.[20] It is of interest to compare leukemia, diabetes mellitus and pernicious anemia with polycythemia vera with respect to average age at onset and duration. In a study of diabetes Joslin and associates found that the duration was 14.1 years, with an average age at onset of 50.4 years and an average age at death of 64.5 years.[21] This latter age is in excellent agreement with the average age at death from diabetes computed from mortality statistics for the nation for the years 1940-1945.[22] Hardgrove and his co-workers[23] summarized the data for 80 patients with pernicious anemia who were living in 1944. The average age of onset of this group was 57 years, although this assumes certain average tendencies for age distribution, which is not specifically stated in their data in that the ages of onset are given in ten year intervals ranging from 25 through 79 years. Isaacs[24] in 580 cases found the peak of the age distribution for onset of symptoms to be 55 years. The average age at death of persons having pernicious anemia throughout the years 1940-1945 was 67.1 years as computed from vital statistics data.[22] Combining this with Hardgrove's data, one obtains an approximate average duration for pernicious anemia of ten years. The mortality of leukemia is on the rise.[25] The average age at death from all forms of leukemia for the years 1940-1945 is computed to be 44 years from vital statistics data,[21] and the average duration of life of chronic leukemia is about five years.[26]

It can be seen that at the present time patients with polycythemia vera properly treated have as favorable an outlook as do patients with diabetes mellitus treated with insulin or those with pernicious anemia treated with liver.

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THE EFFECT OF ANTIHISTAMINIC DRUGS ON CONVULSIVE SEIZURES

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Certain antihistaminic drugs are analeptics and produce convulsions in animals. Although the dose required is about a hundred times that used clinically,[1] 1 case is on record in which fits were produced.[2] In a study of the effect of several antihistaminic agents on epileptic seizures, we have found that attacks could be evoked in some persons by doses even smaller than those generally used clinically. This observation deserves the consideration of physicians who are prescribing these drugs.

The study was undertaken to see if the common action of myanesin®[3] (3-ortho-toloxy-1,2-propanediol), and diphenhydramine (benadryl®)[4] on parkinsonian tremor also applied to an action on convulsive manifestations. We had observed[5] from electroencephalographic records that the first drug abolished petit mal discharges but increased the discharges from focal lesions of the cerebral cortex. A similar study was therefore made of the action of diphenhydramine and tripelennamine (pyribenzamine®) on seizure cases. Intravenous tests were first employed with recording from frontal and in some cases additional leads.

RESULTS OF INTRAVENOUS INJECTION

Diphenhydramine was given to 13 patients with petit mal, 3 of whom had the variant type of seizure (Lennox).[6] In 7 patients continuous recording was made; in others the spike-wave bursts were induced by hyperventilation, care being taken to assure uniformity of

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This study was supported in part by the Kirby-McCarthy Fund.

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Dr. F. L. Mohr of Ciba Pharmaceutical Products, Inc., cooperated in this study, for which the manufacturer prepared pyribenzamine hydrochloride® for intravenous use.

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breathing (tables 1 and 2). In these 13 patients, doses ranged from 30 to 125 mg. of diphenhydramine. Electroencephalographs of 10 patients showed a decided reduction of the spike-wave abnormality; in general, both frequency and length of the bursts decreased. In 1 instance (case 6) the abnormality completely disappeared for three hours. Both true and variant forms of petit mal were affected (figs. 1 and 2).

Table 1.—*Intravenous Injection of Diphenhydramine Hydrochloride or Tripelennamine Hydrochloride in Petit Mal*

Case	Medication * Mg.	Mean Time Spike Wave, Seconds		Mean Time Hyperpnea, Seconds		Trials		Observation Time, Min.	
		Before	After	Before	After	Before	After	Before	After
1	D 30	3.7	0.9	103	162	6	10	40	85
2	D 40	3.0	0.5	46	104	11	10	62	138
3	D 60 + 40	10.8	9.9	74	82	10	10	125	105
4	D 75	11.0	5.0	120	170	7	6	80	80
	T 35	10.0	11.0†	86	124	7	4	105	60
5	D 75	20.0	7.0	70	130	11	20	75	170
	D 125	20.0	5.0	70	111	5	12	45	120
	T 75	19.0	14.0	60	60	3	12	15	70
6	D 50	10.0	1.0	130	190	14	8	80	65
	D 60	8.0	1.0	100	160	5	24	30	250
	T 25	8.0	42.0†	130	55	5	3	44	61
7	D 60	48.0	24.0	111	111	8	13	63	114
	D 100	73.0	39.0	67	105	5	5	50	50
	T 60	60.0	55.0	59	63	5	8	63	95

* D stands for diphenhydramine hydrochloride; T, for tripelennamine hydrochloride.
† Many spontaneous bursts.

In sharp contrast to the effect in petit mal, administration of diphenhydramine increased the amplitude and frequency of the spikes in 2 cases of focal discharge. In 1 a motor convulsion followed.

Diphenhydramine therefore diminished the electrical abnormality in petit mal but increased it in focal cases. This action resembled results which were observed after myanesin® therapy.

Table 2.—*Intravenous Injection of Diphenhydramine Hydrochloride or Tripelennamine Hydrochloride in Convulsive Disorders*

Case	Type *	Medication.† Mg.	Mean Time Abnormality, Seconds per Min.		Observation Time, Min.	
			Before	After	Before	After
8	T. P. M.	D 25	10.00	2.0	22	31
9	T. P. M.	D 25	10.00	2.0	26	42
10	T. P. M.	D 40	2.20	2.9	66	17
		T 20	5.00	47.0‡	45	10
11	P. M. V.	D 60	29.00	24.0	21	46
12	P. M. V.	D 40	37.00	9.0	28	72
		T 40	33.00	60.0	16	38
13	P. M. V.	D 40	7.70	3.1	29	29
		T 30	5.20	7.3	10	26
14	F. F.	D 30	0.32	13.4	27	45
		T 30	0.01	51.0‡	14	17

* T. P. M. signifies true petit mal; P. M. V., petit mal variant; F. F., abnormal discharge, frontal focus.
† D stands for diphenhydramine hydrochloride and T for tripelennamine hydrochloride.
‡ Major seizures.

Tripelennamine was given to 7 patients with petit mal, and in 5 of these, in contrast to the effect of diphenhydramine, a distinct increase in the abnormality was observed (tables 1 and 2; fig. 3). In fact, a major grand mal seizure developed in 1 patient. The 2 patients whose seizures were uninfluenced were the only members of the group receiving anticonvulsant medication at the time. Furthermore, in 1 patient with focal discharge a jacksonian seizure was precipitated, and the clinical and electrical manifestations of a psychomotor attack developed in 1 patient after only 8 mg. of tripelennamine hydrochloride had been administered.

This drug therefore increased the abnormality in both petit mal and focal cases. The dosage employed was smaller than, or equal to, that of diphenhydramine: 8 to 75 mg. The result was noted after a delay up to ten minutes. In general the effect of these drugs could be noted for about an hour.

RESULTS OF ORAL ADMINISTRATION

These drugs were then employed orally to see if the same effects could be maintained. The first results suggest, tentatively, that the effect observed after intravenous injection may be maintained by prolonged oral use (table 3).

Diphenhydramine hydrochloride in daily oral doses of 75 to 400 mg. was given to 12 subjects with true petit mal. Of the 12, 8 had fewer seizures while taking the drug. In 4 there was a remarkable reduction in the number of attacks.

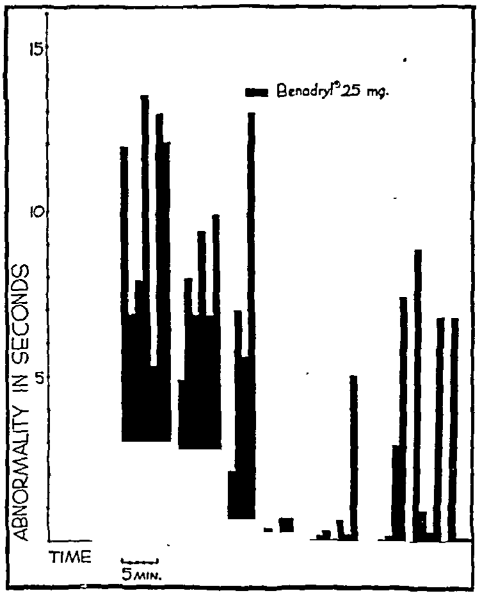

Fig. 1.—Effect of diphenhydramine (benadryl®) on electroencephalogram of true petit mal. The time occupied by spike and dome formations in each minute is indicated on the ordinate in seconds (continuous record before and after administration of 25 mg. of the drug intravenously).

Tripelennamine failed to effect improvement in the patients tested, and 1 patient had an increased frequency of generalized seizures. Four of the petit mal patients had infrequent motor seizures. They had major attacks so infrequently that the effect of diphenhydramine cannot be evaluated at this time.

Although this clinical material is small there is definite evidence that diphenhydramine has an effect on petit mal seizures which may have therapeutic value. A more precise estimate of its utility will require more time and case numbers. Tripelennamine therapy is contraindicated in petit mal, and both of these agents are contraindicated in cases of focal discharge. Before either is prescribed in seizure cases an analysis of the electroencephalograph should be made.

COMMENT

The stimulating effect of diphenhydramine and tripelennamine on focal cortical discharges and of the latter on petit mal might result from a selective sensitivity of epileptic persons, as has been observed with metrazol[5] (pentamethylene tetrazol) and other convulsants. The antihistaminic action common to these drugs could not account for the opposite effects of diphenhydramine and tripelennamine. In addition to their antihistaminic action, the drugs also have an antiacetylcholine activity which is greater for the former than for the latter.[7] The results on petit mal therefore favor the drugs with this action,[8] but an antihumoral effect could scarcely account for the excitation of cortical discharge and the suppression of petit mal spike-waves. The solution is more likely to be sought in interpreting the observation that diphenhydramine and tripelennamine act, though in opposite directions, on the mechanism responsible for petit mal discharge.

Jasper's studies[9] suggest that this discharge may arise from the reticular system of the thalamus, stimulation of which produces the typical electrical patterns and clinical fits. If the concept be correct, these drugs are affecting this system and probably other basal ganglions as well, as the effect on parkinsonism suggests. If the effect of diphenhydramine depends on a depression of this region of the brain, the cortical firing might be the result of a release phenomenon, possible via the suppressor systems in this region of the brain. Perhaps the preliminary "quieting" of the record preceding an induced fit might be so interpreted. Thus a neuronal rather than a humoral cause may be sought to account for these observations.

TABLE 3.—*Attacks per Eight Day Period Before and After Diphenhydramine and Tripelennamine Therapy*

Case	Medication Continued *	Attacks Before †	
1	None	P. M. 480 G. M. 0	{ D 75 mg. 121 18 1 5 0 } 5 6 11 5 5 0 1 3
2	None	P. M. 100 G. M. 0	{ D 100 mg. 10 1 0 0 }
3	Pb. gr ½ Dil. gr. 1½	P. M. 32 to 64 G. M. 0	{ D 100 mg. 31 17 0 2 } 7 2 16 2 4 { D 100 mg. 64 4 0 0 }
4	Tri. gr. 25	P. M. 32 to 64 G. M. 0	{ D 75 mg. 14 0 1 } { Tri. stop. 0 35 } { D 200 mg. 174 69 30 } (Tri. gr. 15) Tri. stop. 0 to period 18
5	None	P. M. 16 G. M. 0	{ T 75 mg. 5 7 } { D 75 mg. 4 2 } 0 0 0 0 0 4 6
6	None.	P. M. 24 G. M. 0	T 100 29 { D 100 18 14 } { D 150 13 9 } 13
7	Tri gr. 15	P. M. 80 G. M. 0	{ D 75 mg. 23 13 7 } T 75 mg. 22 22 { D 150 17 30 } 26
8	None	P. M. 100 G. M. 0	{ D 100 mg. 76 52 55 40 }
9	"Mesantoin", Gr ¾; Pb. gr. 1	P. M. 64 G M. 1 a mo.	D 75 36 { D 150 9 16 } { D 200 mg. 6 8 5 } "Mesantoin" and Pb. stopped 1 1 1 1 1 1
10	Pb. gr ¼; Tri. gr. 20	P M. 32 G. M. 1 a yr.	T 125 24 D 125 27 { D 250 mg. 18 25 }
11	Dil. gr 6	P. M. 3 to 6 G. M. 1 a yr.	{ D 100 1 4 } { D 400 mg. 2 2 4 4 }
12	Pb gr ¾	P. M. 60 G. M. 1 or 2 a mo.	D 75 32 { D 100 mg. 37 61 54 }

* Pb stands for phenobarbital sodium; Dil., for diphenylhydantoin sodium; Tri., for trimethadione.
† P. M. stands for petit mal; G. M., for grand mal; D, for diphenhydramine hydrochloride; T, for tripelennamine hydrochloride; Tri., for trimethadione.

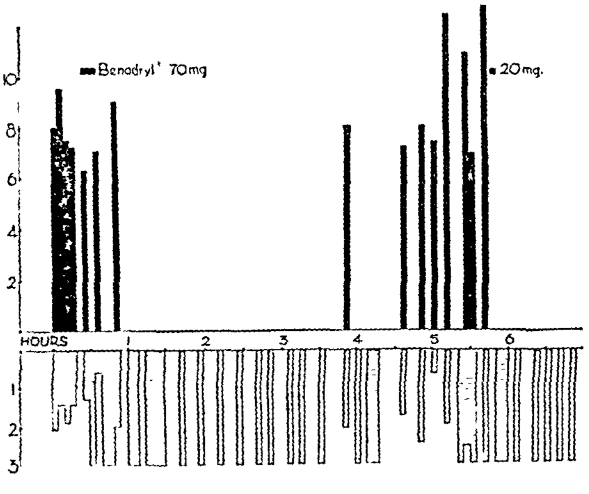

Fig. 2.—Preparation of graph similar to figure 1. Bursts of spike-dome waves were provoked by hyperpnea, duration of which is indicated below abscissa in minutes. Spike-wave forms were abolished for about three hours after administration of 70 mg. diphenhydramine hydrochloride (benadryl®) intravenously. After reappearance of spike-wave forms an additional injection of 20 mg. again abolished this activity.

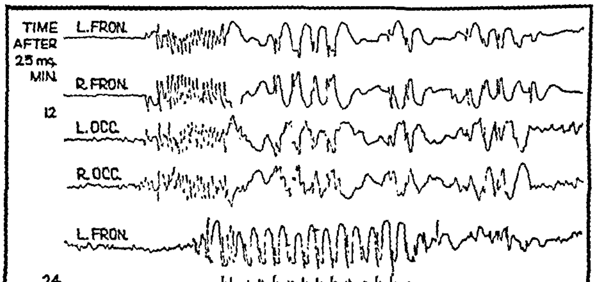

Fig. 3.—Electroencephalogram in petit mal (previous tracing normal). After 25 mg. tripelennamine hydrochloride (pyribenzamine®) was given intravenously spontaneous spike-wave bursts occurred. Twelve minutes after, clusters of spikes were seen. Spike-wave forms were still present twenty-four minutes after injection. The spikes reached 200 microvolts and the 3 per second slow waves 300 microvolts.

SUMMARY

A study of the effect of two antihistaminic drugs, diphenhydramine (benadryl®) and tripelennamine (pyribenzamine®), in epileptic cases has shown that both are capable of inducing seizures in patients with

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7. Loew, E. R.; Kaiser, M., and Anderson, M.: Federation Proc. **5**: 190, 1946. Loew, E. R.: Physiol. Rev. **27**: 542, 1947. Footnote 1.
8. Feldberg, W.: Physiol. Rev. **25**: 596, 1945.
9. Jasper, H., and Droogleever-Fortuyn, J.: A. Research Nerv. & Ment. Dis. **26**: 272, 1946. Jasper, H.: Proc. Philadelphia Physiol Soc., to be published.

focal lesions of the cerebral cortex. Tripelennamine also increases petit mal seizures, but diphenhydramine has the opposite effect. This latter drug on oral administration has decreased the frequency of petit mal attacks. No claim is made for its place in the treatment of this condition at this time.

These agents must be used with care in treatment of patients with convulsive disorders, with the knowledge that they are capable of inducing seizures in such persons. This effect may find use in activating, or evoking, the abnormality in electroencephalographic tests.

3400 Spruce Street.

Clinical Notes, Suggestions and New Instruments

LOEFFLER'S SYNDROME

Occurrence in Two Patients Treated with Penicillin in Oil and Wax

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and
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Philadelphia

Transitory pulmonary infiltrations associated with eosinophilia of the peripheral blood has been described as an allergic reaction ocurring principally in persons with parasitic disease such as amebiasis, trichinosis, ascariasis and cutaneous helminthiasis.[1] This condition, usually referred to as Loeffler's syndrome, is somewhat variable in its course and severity, but is generally characterized by relatively mild clinical symptoms, which include fever, paroxysmal cough with sputum containing eosinophils, slight to moderate leukocytosis with eosinophilia and migratory pulmonary infiltrations evident roentgenographically.[2]

A plausible theory of the mechanism involved in Loeffler's syndrome is that the vascular system becomes hypersensitized to an extrinsic allergen and that the small blood vessels and capillaries of the lungs act as one of the shock structures. The damage to these vessels causes increased permeability of their walls, resulting in the pulmonary infiltrations.[3]

We have recently observed 2 patients with allergic reactions to penicillin in oil and wax, in whom there were transitory pulmonary infiltrations and peripheral eosinophilia.

REPORT OF CASES

Case 1.—R. A., a 43 year old white woman, was first seen in the dermatology clinic on Jan. 27, 1948. She had florid secondary syphilis with lesions which were positive for Treponema pallidum on dark field examination. The result of serologic tests of the blood for syphilis were strongly positive with the Kolmer, Kline and Kahn (256 units) methods. Treatment was started on the day of examination. It was planned to administer an experimental outpatient schedule of 600,000 units of penicillin in oil and wax three times weekly for ten weeks.

Within two to three hours after the first P. O. B. injection the patient experienced rather severe chills and fever, followed by an exacerbation of all her cutaneous lesions. This reaction lasted less than twenty-four hours and was interpreted as of the Herxheimer type. The second injection of penicillin in oil and wax, on January 29, was well tolerated. However, after the third and fourth injections, on January 31 and February 2, respectively, the patient complained of soreness of the buttocks at the injection sites, leg pains and itching of the scalp along the hair line. After the fifth injection, on February 4, she experienced chills, fever, nausea and severe leg pains, but did not report to the clinic again until February 9. At that time a giant hive was noted at the site of the previous injection. Her temperature was over 100 F. She was advised to enter the hospital, but refused to do so until February 12. On admission her temperature was normal and the symptoms were subsiding except for the leg pains. It was decided to attempt to continue the penicillin therapy with coincident administration of diphenhydramine hydrochloride and aminophylline (hydryllin®) in a dose of 50 mg. every four hours. Within six hours after the next injection of penicillin in oil and wax, the patient again had chills, fever (temperature to 103 F.) and leg pains. The temperature returned to normal in twenty-eight hours, but the leg pains persisted.

The reaction to an intradermal test with 500 units of crystalline penicillin G in 0.1 cc. isotonic sodium chloride solution was negative in 20 minutes, 24 hours and 48 hours. A scratch test with peanuts (test material from Arlington Chemical Company) elicited a negative response. An intramuscular injection of 20,000 units of an aqueous solution of penicillin G was given without untoward reaction.

On February 16, after the temperature had remained normal for forty-eight hours, another injection of penicillin in oil and wax (300,000 units) was given. This was followed in about six hours by a recurrence of the symptoms described following previous injections of penicillin in oil and wax. There was tenderness of the anterior surface of the left thigh, most pronounced about the fossa ovale and extending to the knee. A consultant from the peripheral vascular disease section expressed the belief that this was due to thrombophlebitis and prescribed heparin and dicumarol.® The patient continued to have a high temperature along with the previously described symptoms. She also had rather extensive herpetic lesions about the lips and nares.

A blood cell count on February 14 showed hemoglobin, 75 per cent; neutrophils, 75 per cent; monocytes, 1 per cent, and lymphocytes, 23 per cent (the total white blood cell count was not reported). On the morning of February 16, prior to the injection of penicillin in oil and wax, a blood cell count was recorded: hemoglobin, 78 per cent; red blood cells, 4,000,000; white blood cells, 9,000; neutrophils, 84 per cent; eosinophils, 4 per cent; monocytes, 1 per cent, and lymphocytes, 11 per cent. However, on February 18, the white blood cell count was 14,900, with neutrophils, 50 per cent; eosinophils, 31 per cent; basophils, 1 per cent; monocytes, 5 per cent, and lymphocytes, 13 per cent. Subsequent blood cell counts revealed the following eosinophil counts: 44 per cent on February 21, 31 per cent on February 27 and 41 per cent on March 2.

A roentgenogram of the chest on February 16 showed decided accentuation of the pulmonary markings throughout both lung fields. There were no symptoms commensurate with these roentgen observations.

The results of urinalyses were negative. Results of other examinations, including stool studies for ova and parasites and agglutinations for typhoid H and O, paratyphoid A and B and Bacillus abortus, were negative.

The symptoms gradually subsided, and the patient became afebrile on February 20 (five days after the last injection of penicillin in oil and wax). A roentgenogram of the chest on February 25 showed almost complete clearing of the lung fields, and on March 18 the lungs were completely clear roentgenologically. The thrombophlebitis also resolved, and the patient was discharged on March 4 without further antisyphilitic treatment.

The patient was followed in the outpatient clinic and, as of the time of writing, had remained well. Results of serologic tests of the blood for syphilis were doubtful on March 23 and negative on April 23 and June 1, respectively.

Case 2.—V. W., a 21 year old Negro woman, was first seen on May 24, 1948, when dark field positive condyloma lata of the vulva were discovered on examination. The result of the rest of the physical examination, including examination of

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From the Institute for the Study of Venereal Disease, John H. Stokes, Director, and the Departmer[illegible]ology of the Hospital of the University of I[illegible] illsbury, Director.

[1] Hodes, P. J., and [illegible] Lung (Tropical Eosinophilia), Am. J. M. Sc. **210**: 288, 1945.

[2] Loeffler's Syndrome, editorial, Internat. M. Digest **38**: 382, 1941. Transitory Pulmonary Infiltrations Associated with Eosinophilia Loeffler's Syndrome, editorial, J. A. M. A. **126**: 837 (Nov. 25) 1944.

[3] Barden, R. P., and Cooper, D.: The Roentgen Appearance of the Chest in Diseases Affecting the Peripheral Vascular System of the Lung, Radiology **51**: 44, 1948.

the chest, were negative. The result of the serologic test of the blood for syphilis was strongly positive with the Kolmer, Kline and Kahn (256 units) methods. Treatment was begun on the day of examination; it was planned to give 600,000 units of penicillin in oil and wax daily (except Sundays) for fifteen injections. Except for a mild febrile Herxheimer reaction following the first injection, the patient experienced no untoward reactions. She failed to report for two of the scheduled injections on May 28 and May 31. On June 4, after the ninth injection, she experienced a rather severe frontal headache, fever and a nonproductive cough. She was admitted to the hospital the evening of June 5. On examination there was noted a generalized flush, temperature of 104 F., rapid shallow respirations, bronchovesicular breath sounds over portions of the lung fields and some crackling rales. Further studies revealed albuminuria (2 plus) and the following blood cell count: hemoglobin, 75 per cent and white blood cells 12,000, with 74 per cent neutrophils, 4 per cent eosinophils, 5 per cent monocytes and 17 per cent lymphocytes.

A roentgenogram of the chest was taken on the second hospital day (June 6). There was a rather diffuse patchy infiltration throughout both lung fields, which in the opinion of the roentgenologist was due to some type of chronic inflammatory disease.

Smears and cultures of sputum and gastric washings were negative for acid-fast bacilli. The result of a heterophil antibody test was negative. The electrocardiogram was normal except for sinus tachycardia (110) which could be explained by the high temperature.

Urinalysis on June 8 gave negative results. A blood cell count on June 10 showed 8,000 white blood cells with 15 per cent eosinophils. On June 12 the white blood cell count was 10,000 with 21 per cent eosinophils. On June 15 the white blood cell count was 8,400 with 37 per cent eosinophils.

The patient improved rapidly with symptomatic treatment—bed rest, forced fluids and 300 mg. of an antihistaminic preparation, tripelennamine hydrochloride (pyribenzamine®) daily. The temperature fluctuated between 101 and 104 F. for forty-eight hours after the patient's admission and then dropped precipitately to normal.

A roentgenogram of the chest was taken on June 11. The roentgenologist reported that since the previous examination (June 6) there had occurred decided diminution of the abnormal densities then present in lung fields. He stated that the rapid and almost complete clearing would lend strong support to the thought that this process was due to a hypersensitivity reaction. Another roentgenogram was taken on June 15, 1948, and the changes noted in the examination of June 6 had completely disappeared.

Prior to the patient's discharge, the reaction to an intradermal test with 200 units of penicillin G in isotonic sodium chloride solution (0.1 cc.) was completely negative. The result of an intradermal test with 0.05 cc. of penicillin in oil and wax was negative in 20 minutes, but produced a 1.5 cm. papule with surrounding erythema and edema of about 5 by 5 cm. in 24 hours.

The patient was discharged on June 15. No additional antisyphilitic treatment was given. At the time of last examination (July 20) she had remained asymptomatic. The white blood cell and differential counts had become normal. The reaction to the serologic test of the blood for syphilis remained positive.

COMMENT

It is felt that these 2 cases are worthy of presentation since they represent an apparently unusual type of allergic reaction developing during treatment with penicillin in peanut oil-beeswax. They emphasize the ease with which allergic pulmonary involvement may be overlooked or dismissed by the physician as an infection of the upper part of the respiratory tract, virus pneumonia or influenza.

One patient (case 1) showed few symptoms or signs suggestive of pulmonary involvement, although she presented numerous other allergic phenomona. She was hospitalized because of leg pains, chills and fever during the course of treatment with penicillin in oil and wax. It was felt that penicillin therapy should be continued only with hospital supervision. The roentgenogram of the chest revealing the pulmonary involvement was one of the many studies performed because of the high eosinophil count in the peripheral blood.

The other patient (case 2) presented no detectable cutaneous or other localizing signs or symptoms suggestive of intolerance to penicillin in oil and wax and was hospitalized because of a nonproductive cough and a temperature of 104 F., which appeared to be out of proportion to her physical condition. It is to be noted that the first blood cell count revealed only slight eosinophilia, in spite of the extensive pulmonary involvement shown by roentgenologic examination.

Before the transitory nature of the pulmonary infiltrates could be established, other diagnoses were considered, such as, pulmonary oil embolism, virus pneumonia or observations of the chest representative of a chronic pulmonary infection. A reaction similar to the so-called ninth day erythema of the arsenical era was considered, but the only analogous features were the time of onset after the start of therapy and the eosinophilia.

Although the agent responsible for the allergic reactions was not conclusively proved, the negative reactions to the intradermal tests and the failure to exacerbate the process with intramuscular injections of aqueous penicillin G, plus the tuberculin type 24 and 48 hour reaction to 0.05 cc. of penicillin in oil and wax given intradermally (case 2), incriminate the beeswax. It is conceivable that a contaminant in the wax, such as a pollen, might have been the allergen.

SUMMARY

Two patients who presented transitory pulmonary infiltrations and eosinophilia during the course of injections of penicillin in oil and wax for early syphilis are reported. Although not conclusively proved, the evidence pointed to the wax as the allergenic agent.

REFRACTORY AMEBIC ABSCESS OF THE LIVER TREATED WITH CHLOROQUINE

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New York

In 1948 Conan[1] reported 6 cases of hepatic amebiasis (without abscess of the liver) successfully treated with chloroquine. In the same year Murgatroyd and Kent[2] reported the cure of a case of refractory amebic abscess of the liver treated with chloroquine. The success of this treatment, after the failure of emetine, diiodo-hydroxyquinoline (diodoquine®) and penicillin given systemically and proflavine sulfate used locally, was striking. In 1949 Conan confirmed the efficacy of chloroquine against hepatic amebiasis (without abscess) with the report of several more cases in which it was used with success.[3]

The purpose of this article is to report a second case of refractory amebic abscess of the liver, which has been successfully treated by chloroquine, confirming the result reported by Murgatroyd and Kent.

REPORT OF CASE

H. S., a white man aged 53, was admitted on Feb. 1, 1949 after transfer from another institution, where he had been hospitalized since September 1948 with a draining amebic abscess of the liver and an extensive, sloughing, necrotic ulcer involving skin and subcutaneous tissue of the midepigastrium. Emetine hydrochloride (2 grains [130 mg.] orally for several weeks at a time) penicillin, streptomycin and local irrigation of the wound and sinus were all unsuccessful in therapy. The patient had become anemic, had lost 30 pounds (13.6 Kg.) and had given up hope of life.

From the Department of Medicine, New York Hospital, and the Department of Public Health and Preventive Medicine, Cornell University Medical College.

[1] Conan, N. J., Jr.: Chloroquine in Amebiasis, Am. J. Trop. Med. **28**: 107, 1948.

[2] Murgatroyd, F., and Kent, R. P.: Refractory Amoebic Liver Abscess Treated by Chloroquine, Tr. Roy. Soc. Trop. Med. & Hyg. **42**: 15, 1948.

[3] Conan, N. J., Jr.: The Treatment of Hepatica Amebiasis with Chloroquine, Am. J. Med. **6**: 309, 1949.

Physical examination at the time of admission revealed extreme pallor and emaciation. There was an ulcerative lesion in the midepigastrium 15 cm. long by 12 cm. wide, extending from just below the xiphoid process almost to the umbilicus. Its base was necrotic; the edges were raised, swollen and undermined by pockets of pus. At the superior pole of this lesion a sinus from which drained a chocolate-colored pus extended beneath the xiphoid process downward to the liver (fig. 1).

Actively motile amebas containing ingested red blood cells were demonstrated in the discharge from the sinus and in the pus from the pockets at the edges of the wound. Iron-hematoxylin stains confirmed the identification of Endomeba histolytica. Fixed and stained tissue sections taken downward through the edges of the wound revealed trophozoites with morphologic characteristics of histolytica. The complement fixation tests for amebiasis (performed by the National Institutes of Health) was positive.

The patient exhibited a mild fever (37.8 C., 99.6 F.) which subsided to normal levels twenty-four hours after admission and remained there. There were 3,000,000 erythrocytes with 10 Gm. of hemoglobin, and the white blood cell count was 28,000 with a shift to the right. Roentgen examination of the chest revealed clear pulmonary fields and costophrenic sulci and smooth diaphragmatic domes. An electrocardiogram was essentially normal.

Chloroquine diphosphate (aralen®) 0.5 Gm., was administered on the day of admission and 0.5 Gm. a day was given thereafter for ten days. On the fourth day of treatment the drainage from the sinus became negative for amebas and, except for a single organism observed on the seventh day, remained negative. Blood transfusions were given on the seventh and ninth days. A penicillin-resistant, hemolytic Staphylococcus aureus was cultured from the wound; hence, aureomycin was administered on the eighth, ninth and tenth days. The drainage from the sinus decreased in amount daily, ceasing entirely on the tenth day (fig. 2). On the twelfth day the dosage of chloroquine diphosphate was decreased to 0.25 Gm. a day until the twenty-first day, when it was discontinued entirely save for a weekly maintenance dose of 0.5 Gm. of the drug. The wound and sinus granulated in, and on the seventeenth day several small pinch grafts of skin were successfully applied. The patient gained weight and strength and was discharged on the thirty-first hospital day. Stool examinations were consistently negative for E. histolytica and have remained so during a follow-up period of two months.

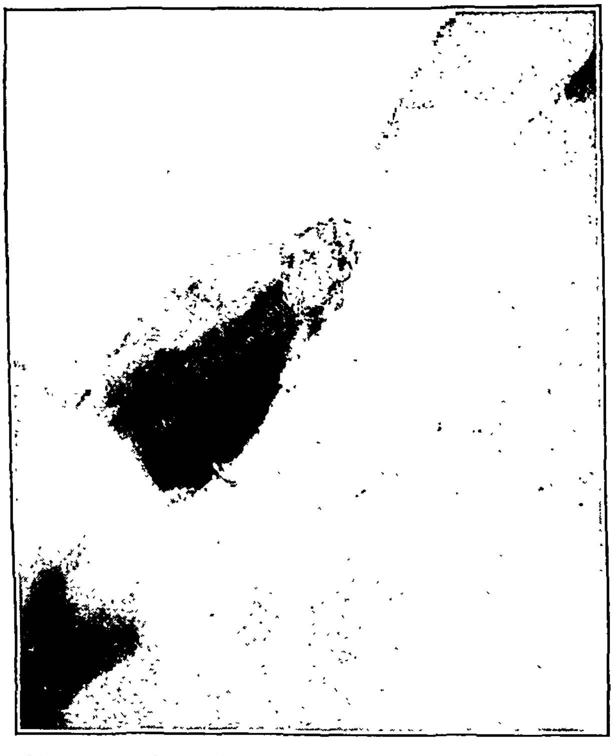

Fig. 1.—Day after admission. Note the necrotic base of the ulcer, the raised and undermined edges. The draining sinus is obscured by sanguinopurulent material.

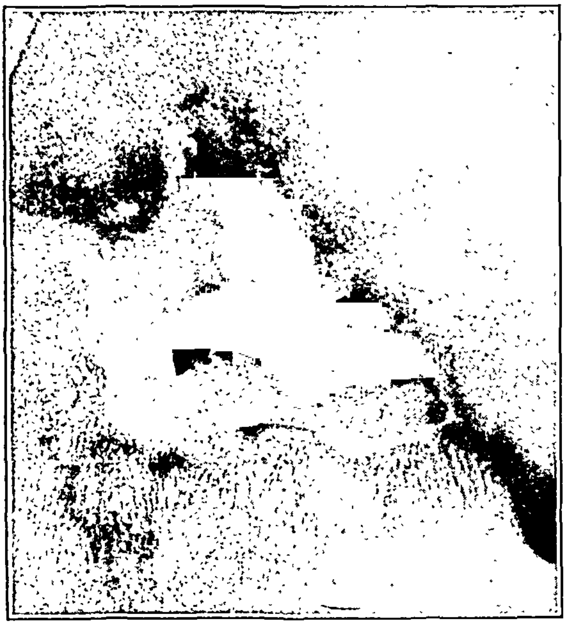

Fig. 2.—Tenth hospital day. Note the clean granulation tissue, the absence of drainage from the sinus tract to the liver and recession of the wound edges.

Convalescence was uneventful. The patient returned to work and has remained free of symptoms since discharge, a period of eight weeks.

COMMENT

That emetine hydrochloride alone is not an efficient amebacide is well established. For the treatment of acute dysenteric symptoms in amebiasis it is excellent, but it should then be followed by more specific drugs such as the oxyquinoline derivatives.[4]

Chloroquine, a drug of the 4-amino-quinoline series, used mainly as an antimalarial, exerts amebacidal activity against the trophozoites of E. histolytica both in vitro [2] and in vivo in the human being.[5] It is almost completely absorbed from the gastrointestinal tract and is localized in the liver of the rat in concentrations four hundred to six hundred times greater than those in the plasma.[6] It caused no significant toxic effects in a group receiving 0.5 Gm. of the drug a day for seventy-seven days followed by 0.5 Gm. a week thereafter for a year.[7]

The optimal dosage for the treatment of amebic hepatitis with or without the formation of abscess has not yet been determined. In the present case less than the usual dosage of 1 Gm. of chloroquine a day followed by 0.5 Gm. for two to three weeks was used. The patient exhibited no intolerance to the drug.

By utilization of the newer biologic technics it was possible to demonstrate that the hemolytic Staph. aureus for which the patient had been receiving penicillin was resistant to that drug but was sensitive to aureomycin. The cultures for this organism were positive until the cessation of drainage from the hepatic abscess.

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[4] Craig, C. F., and Faust, E. C.: Clinical Parasitology, Philadelphia, Lea & Febiger, 1945, p. 90.

[5] Conan.[1] Murgatroyd and Kent.[2] Conan.[3]

[6] Berliner, R. W.; Earle, D. P., Jr.; Taggart, J. V.; Zubrod, C. G.; Welch, W. J.; Conan, N. J.; Bauman, E; Scudder, S. T., and Shannon, J. A.: Studies on the Chemotherapy of the Human Malarias: VI. Physiological Disposition, Antimalarial Activity, and Toxicity of Several Derivatives of Four Aminoquinolines, J. Clin. Investigation **27**: 98, 1948.

[7] Alving, A. S.; Eichelberger, L.; Craig, B., Jr.; Jones, R., Jr.; Whorton, C. M., and Pullman, T. N.: Studies on the Chronic Toxicity of Chloroquin (SN-7618), J. Clin. Investigation **27**: 60, 1948.

SUMMARY AND CONCLUSION

1. A case of amebic abscess of the liver was refractory to emetine therapy but was successfully treated by chloroquine diphosphate.

2. Advances in microbiologic technic have made possible more rational treatment of a secondary wound invader.

Since I submitted this report, another two months have elapsed and the patient has continued free of symptoms and with negative stools.

TEMPORARY RELIEF OF ASTHMA BY JAUNDICE

Report of Three Cases

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Boston

Cannon mentioned the word "Serendipity," which he attributed to Horace Walpole's story "The Three Princes of Serendip" (Ceylon). "As these princes traveled they were always making discoveries by accident or sagacity of things they were not in quest of." [1]

By chance, the observation was made that the development of jaundice in a patient with chronic intractable asthma was accompanied with dramatic relief of his symptoms. This striking coincidence suggested a possible causal relationship between jaundice and remission of asthmatic symptoms which has led to a search for other similar cases.

The relationship between jaundice and the relief of symptoms in rheumatoid arthritis has long been noted, and considerable literature has appeared, with speculation as to its cause.[2] It is probable that a similar relationship between asthma and jaundice has been noted clinically by allergists, but there are few references to it. Rackemann, in his annual review of the literature, remarked, "Jaundice relieves asthma while the jaundice is present and for some time afterward." [3] Other experienced allergists in personal discussions, have not noted this sequence. Boros[4] reported a case of a man, age 36, who had jaundice and ascites after taking an average of 10 pills of cinchophen a month for ten months for the relief of rheumatism of the right leg. With the appearance of jaundice, not only did his rheumatic pain stop but there was complete disappearance of ragweed hay fever and coincident asthma, allergic symptoms which had appeared regularly for the previous nine years. He made a complete recovery from the jaundice and hay fever. Six months later results of galactose tolerance and sulfobromophthalein sodium tests were negative and the following August he had no hay fever at all.

It has long been known that asthma is relieved during and for some time after fever. This fever may be the result of an acute infectious disease or induced by artificial means. Surgical operations often produce temporary relief. It is believed that the use of ether as an anesthetic may be the cause, but this will not explain the relief that has been seen after spinal anesthesia.

In this paper, 3 cases of chronic or intractable asthma are presented in which there was relief of asthma with the appearance of jaundice due to (1) infectious hepatitis, (2) presumable homologous serum hepatitis (jaundice) and (3) metastatic adenocarcinoma of the liver.

REPORT OF CASES

CASE 1.—A white man, aged 50, had intractable asthma for twenty-four years. Reactions to skin tests with the ordinary food and inhalant allergens had been repeatedly negative. For the first few years he was treated by the usual method of hyposensitization without any benefit, and for many years he relied on small and frequent doses of epinephrine for relief. The only times when he had experienced real improvement were during four periods of about a month each, immediately after operations. Three of these were radical operations on the paranasal sinuses at the ages of 27, 32 and 33, because of roentgen findings of pansinusitis associated with the asthma. These operations were performed in an attempt to remove any foci of infection that were believed to cause his symptoms. There was another period of about four weeks' relief following an appendectomy for which spinal anesthesia was employed. For the seven or eight years prior to examination he had secured relief of symptoms only by the use of an average of eight to ten daily injections of epinephrine, 1:1,000, 0.3 cc., together with aminophylline, 100 mg., combined with ephedrine, 25 mg.

About July 1, 1947, vague gastrointestinal symptoms developed, and after a week it was noted that his urine had become darker and his stools lighter, together with the development of some tenderness over the liver. The scleras became yellow, and, finally, definite icterus of the skin appeared. With the onset of the initial gastrointestinal symptoms it was noted that the asthma had disappeared, and by the end of the first week there was no need for epinephrine at all. For a period of eight weeks thereafter he experienced practically no asthma, and during the next two weeks he required but one injection of epinephrine a day, usually on arising. The total period of relief was about ten weeks, the amelioration beginning before jaundice was observed clinically and at a time when his only symptoms were nausea and some abdominal distress. Unfortunately, the asthma subsequently recurred as heretofore. Tests of hepatic function were made rather late in the course of the disease. On September 5, these showed: thymol turbidity, 2.3 units; thymol flocculation, plus-minus; colloidal gold, plus-minus; cephalin cholesterol flocculation, plus-minus; 1 minute serum bilirubin, 0.67 mg. per hundred cubic centimeters; total serum bilirubin, 1.27 mg. per hundred cubic centimeters, and serum esterase, 120 millimoles per hour (normal values 150 to 250 millimoles per hour). Repeat tests on July 8, 1948, showed: thymol turbidity, 0.9 units; thymol flocculation, 0; 1 minute serum bilirubin, 0.14 mg. per hundred cubic centimeters, and total serum bilirubin, 0.25 mg. per hundred cubic centimeters.

CASE 2.[5]—The patient was a 27 year old white man who gave a family history of eczema from 7 weeks until 3 years of age. Milk was suspected as the cause, but no skin tests were done. A change to goat's milk gave relief. At the age of 9 years he first noted asthma on going into the barn and feeding the chickens. Skin tests at that time showed decided positive reactions to timothy, orchard grass and ragweed. In 1940 he joined the armed forces and for five years while overseas, in North Africa, Sicily, Italy, France, Germany and the British Isles, was completely free from allergic symptoms. From 1943 to 1945 he was wounded on several occasions and each time was given repeated transfusions of blood plasma. Four months after his return to his home intractable asthma developed. In August 1946, nine months after the last plasma infusion, severe hepatitis developed and he became immediately free from asthma, as he became icteric. His icteric index rose to 54, his albumin-globulin ratio was significantly altered, there was an increase in the bleeding and clotting time and his liver was decidedly enlarged. Recovery was slow with recurrences of jaundice on slight exertion. He was completely free from hay fever and asthma throughout the season. In May 1947 he went to Arizona and when last heard from, in December, was entirely free from symptoms of allergy as well as jaundice.

CASE 3.[6]—Mrs. F. first experienced asthma in April 1946, at the age of 56. The reactions to all skin tests were negative. Roentgenograms of the chest showed slight emphysema. From its onset asthma was severe and intractable. At the time of examination it had persisted constantly for two years, with no seasonal variation. She was treated with bacterial vaccines, potassium iodide, tedral® (contains ephedrine, phenobarbital and theophylline) and epinephrine. None of these remedies offered much relief. During the first week of February 1948, upper

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From the Department of Pediatrics, Harvard Medical School, and The Children's Medical Center, Boston.

[1] Cannon, W. B.: The Way of an Investigator, New York, W. W. Norton, 1945.

[2] Hench, P. S.: The Advantages of Hepatic Injury and Jaundice in Certain Conditions, Notably the Rheumatic Diseases, Med. Clin. North America **24:**1209-1238 (July) 1940.

[3] Rackemann, F. M.: Allergy: A Review of the Literature of 1944 and 1945 with Comments on Future Problems, Arch. Int. Med. **77:**700-719 (June) 1946.

[4] Boros, E.: Hay Fever and Asthma During and After Jaundice, J. A. M. A. **109:**113-115 (July 10) 1937.

[5] From Dr. J. S. O'Toole, Potsdam, N. Y.

[6] From Dr. Francis M. Rackemann. From the records of the Massachusetts General Hospital.

abdominal pain developed with nausea and constipation, followed a few days later by the appearance of jaundice. After the onset of the latter her asthma was decidedly improved and the asthma was milder than it had ever been since it first developed. Liver biopsy showed a metastatic adenocarcinoma. The primary site was undetermined.

COMMENT

In any chronic disease characterized by exacerbations and remissions and in which so many variable factors may play a part, some of which may be psychic, any claim to clinical relief must be accepted with considerable caution. I have presented 3 cases of intractable asthma in each of which the development of jaundice was associated with decided remission of symptoms. One can only speculate as to the cause of this and note the remarkable analogy between the relief obtained in cases of rheumatoid arthritis and that seen in chronic asthma. Also, in these two groups of devastating sickness there lie within the person certain reparative powers, the nature of which are as yet unknown, apparently released by alterations in hepatic function. The "reversibility" of disease processes that are frequently regarded as almost hopeless is of interest. The similarity of the relief obtained in these two groups of diseases immediately raises many questions as to their common denominator and as to the underlying mechanism for this dramatic change. Certainly, the observation calls for animal experimentation and further clinical study, both of which have already been started.

THE ONE HOUR RAT OVARY HYPEREMIA PREGNANCY TEST WITH SYNERGIST

PAUL H. FRIED, M.D.
and
A. E. RAKOFF, M.D.
Philadelphia

Investigations by us to overcome certain disadvantages of the rat ovary hyperemia pregnancy tests led to our use of a pituitary synergist to improve the three hour test as a routine laboratory procedure[1] and to our present consideration of a one hour rapid rat pregnancy test for urgent cases. The one hour test is based on the augmentation by a pituitary extract of the rat ovary hyperemia response to chorionic gonadotropin; the latter is the basis of the rat ovary hyperemia reaction. In preliminary experiments it was found that the addition of the pituitary extract to a subminimal effective dosage[2] (0.7 international unit) of chorionic gonadotropin increased the percentage of positive reactions from 12.5 to 100 when tested at one hour.

PROCEDURE

The one hour rat ovary hyperemia pregnancy test with the addition of a pituitary extract was performed on each of 163 specimens sent to the Endocrine Division of the Jefferson Hospital Laboratories. The accuracy of the one hour rat test with and without the addition of the pituitary synergist was compared.

Technic of the One Hour Rat Ovary Hyperemia Pregnancy Test with Pituitary Synergist.—A subminimal ovary hyperemia dose, 0.06 units, of the pituitary synergist[3] was injected intraperitoneally in a single dose through the lower midabdomen of two 26 to 32 day old, 45 to 60 Gm. female albino rats of strain of an unknown identity. Two minutes later a single dose of 2 cc. of an unaltered urine, except for filtration if clouded, was injected in a similar fashion. The rats were asphyxiated with ether in one hour. Autopsy was performed about three minutes after the death of the animals with particular care to avoid hemorrhage and ovarian irritation. The ovaries were examined immediately. A satisfactory positive end point for the test reaction was the presence of one or more hyperemic ovaries, light to dark crimson in color, without regard to ovarian enlargement or follicular changes.

One Hour Rat Ovary Hyperemia Pregnancy Test With and Without the Addition of 0.06 Units of Pituitary Synergist

Final Diagnoses	With Synergist		Without Synergist	
	Positive	Negative	Positive	Negative
Normal pregnancy............	71	2	37	11
Disturbed pregnancy.........	39	2	15	10
Not pregnant.................	0	49	0	30

RESULTS AND COMMENT

The addition of the synergist[3] increased the percentage accuracy in all pregnancy cases from 71.2 to 96.4 and in normal pregnancy cases from 77.0 to 97.2 (see the accompanying table). There were no false positive results in nonpregnancy cases. There were 4 incorrect results among the 82 Friedman tests, the accuracy of which in all pregnancy cases was 94.5 per cent.

The rat ovary hyperemia pregnancy test, as a quick diagnostic procedure for pregnancy, attains its chief usefulness as an aid in the early detection of ectopic pregnancy. The one hour rat test with the addition of the pituitary synergist was performed in 70 suspected cases of ectopic pregnancy and was positive in the 12 actual cases of ectopic pregnancy, as proved by operation.

SUMMARY AND CONCLUSIONS

A one hour rat ovary hyperemia test for pregnancy utilizing a pituitary synergist to augment the reaction was tested. The over-all percentage accuracy of the rat test was 97.5 and of the Friedman test 95.1. The test is of particular value as an aid in the rapid diagnosis of ectopic pregnancy.

1812 Spruce Street (3) (Dr. Fried).

SUCCESSFUL DESENSITIZATION TO PENICILLIN

FRANK GARAI, M.D.
New York

Penicillin is so widely used in antisyphilitic treatment that it is inevitable to have reactions occur in some instances. The Herish-Herxheimer reaction is negligible, especially if the penicillin is used at the beginning of treatment in small doses and if the patient has received some previous treatment with a bismuth compound. For the most part the reactions are allergic, usually so severe that penicillin therapy has to be discontinued.

REPORT OF CASE

H. J., a man aged 56, was married but had no children. Apparently he had been healthy all his life. The last serologic test for syphilis had been made thirty-five years ago and resulted negatively. The patient denied having had an initial lesion on the penis or any rash on his body. He had difficulty in breathing, had pain across the chest occasionally and tired easily. He appeared ill. Pulsations of the blood vessels in his neck were easily seen. Examination of the heart disclosed a diastolic murmur over the aorta. An electrocardiogram revealed aortitis. Reaction to the Wassermann test was 4 plus. The diagnosis was syphilitic aortitis, with latent tertiary syphilis.

In such cases it is not advisable to administer any form of arsenic therapy. Even with treatment for a long duration

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From the Department of Obstetrics and Gynecology and the Endocrine Division of the Hospital Laboratories, Jefferson Medical College and Hospital.

[1] Fried, P. H.: An Evaluation of the Two Hour Rat Test for Pregnancy, Am. J. Obst. & Gynec. **54:** 689-693 (Oct.) 1947; The Two Hour Pregnancy Test Based on Rat Ovary Hyperemia, West. J. Surg. **56:** 552-555 (Oct.) 1948. Rakoff, A. E., and Fried, P. H.: Enhancement of Effect of Chorionic Gonadotrophin on Ovarian Hyperemia in the Rat by Pituitary Extract, Proc. Soc. Exper. Biol. & Med. **66:** 491-492 (Oct.) 1947. Fried, P. H.: Factors Influencing the Rat Ovary Hyperemia Reaction as a Test for Pregnancy, Am. J. Obst. & Gynec. **57:** 868-877 (May) 1949. Fried, P. H., and Rakoff, A. E.: Improvement of the Rat Ovary Hyperemia Test for Pregnancy by Adding a Pituitary Synergist, J. Clin. Endocrinol., to be published.

[2] The amount of chorionic gonadotropin that produced the rat ovary hyperemia reaction in approximately 75 per cent of 5 or more rats, was defined by us as the minimal effective dosage.

[3] Dr. Erwin Schwenk of the Schering Corporation furnished the synergist, chiefly a follicle-stimulating gonadotropin with traces of the luteinizing principle, which was prepared from sheep pituitaries.

doubtful, the usual alternative is a bismuth compound given by injection to stop the acute symptoms.

Penicillin therapy was begun, 20,000 units of crystalline sodium penicillin G in sterile water being administered parenterally every three hours. On the second day a rash appeared on both thighs, which became pruritic and slightly bullous. The penicillin injections were stopped immediately, and antihistaminic drugs were given in large doses. The following day there developed an erythematous vesicular eruption on the upper and lower extremities of the patient and itchiness was severe. The patient received antihistaminic drugs, tripelenamine hydrochloride (pyribenzamine®) and pyranisamine maleate (neoantergan®) for two weeks. The rash slowly disappeared and the skin peeled off the affected areas.

Several skin tests were made with every available brand of sodium and potassium penicillin, 50 units each. In forty-eight hours every skin reaction was strongly positive. A trial was made of calcium penicillin, which is supposed to be painful on injection, but the patient had no more local pain at the site of injection than with the sodium or potassium penicillin. Finally, 50 units of calcium penicillin[1] was given intradermally into the skin on the upper part of the arm. No cutaneous sensitivity appeared. Because calcium penicillin was better tolerated than the other forms, the patient was desensitized successfully with larger and larger doses of the agent administered subcutaneously several times a day. After the dosage reached 10,000 units three time a day without reaction, the patient was given 100,000 units of calcium penicillin a day for two weeks in refracted doses of 20,000 units each. After that the patient improved considerably by clinical criteria. The symptoms of acute aortitis and pain across the chest subsided; the patient gained 16 pounds (7.3 Kg.) in body weight.

It is interesting to note that the patient had for a long time suffered with dermatophytosis on both feet. During the period of desensitization with calcium penicillin the infection on the feet was successfully cleared up with an ointment containing heptaldehyde.

When the calcium penicillin therapy was repeated three months later on the same patient, a skin test with calcium penicillin resulted negatively. With initial treatment consisting of 10,000 units of calcium penicillin administered three times a day, 100,000 units a day have been given in refracted doses for a two week period without any cutaneous or systemic reactions to the antibiotic.

SUMMARY

Successful desensitization to penicillin may easily be achieved with calcium penicillin in refracted doses.

102 East Sixty-Sixth Street (21).

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[1] Heyden Chemical Corp. is the distributor of the calcium penicillin that was used in experimental treatment.

Auricular Fibrillation in Normal Hearts.—That auricular fibrillation occurs in normal hearts has been proved repeatedly at post-mortem examination. Auricular fibrillation is a disturbance of auricular impulse formation and conduction that is a physiologic phenomenon and not a pathologic one. This was admirably demonstrated by Yater and summarized in his conclusion: "There is no pathologic change in the heart characteristic of auricular fibrillation." By direct intra-auricular measurements, Stewart, Crawford and Gilchrist showed that auricular fibrillation with a nearly regular rhythm did not diminish the rate of blood flow. Buchbinder and Sugarman demonstrated, by direct measurements, that the arterial blood pressure is constant in cases of auricular fibrillation with a nearly regular rhythm. Hence, in normal or controlled auricular fibrillation, the cardiac output and the rate of blood flow are not diminished and the blood pressure is constant, ensuring adequate tissue oxygenation and normal tissue metabolism. Since auricular fibrillation in normal hearts is characterized by its slow ventricular rate and negligible or absent deficit, it appears to be an efficient physiologic mechanism.—Hugh H. Hanson, M.D., and David I. Rutledge, M.D., Auricular Fibrillation in Normal Hearts, *The New England Journal of Medicine,* June 16, 1949.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

AUSTIN SMITH, M.D., *Secretary.*

PRIMAQUINE GENERIC DESIGNATION FOR THE DRUG SN 13,272 (8-[4-AMINO-1-METHYLBUTYLAMINO]-6-METHOXYQUINOLINE)

The Malaria Study Section, Laboratory of Tropical Disease, National Institutes of Health, called the attention of the Council to the development of the drug known as SN 13,272, which is chemically (8-[4-amino-1-methylbutylamino]-6-methoxyquinoline) and suggested that a generic name be adopted for this compound. The section suggested the term "primaquine," to distinguish the compound from "pentaquine" and "isopentaquine."

The Council has voted to adopt "primaquine" as the generic name for (8-[4-amino-1-methylbutylamino]-6-methoxyquinoline).

VISAMMIN AS GENERIC DESIGNATION FOR DIMETHOXY-METHYL-FURANO-CHROMOME

The Council's attention was drawn to the desirability of recognizing Visammin as the generic designation for Di-Methoxy-Methyl-Furano-Chromome, since Khellin has been sometimes used as a name for this drug. The term Khellin has been confused with Khellinin, which is the generic designation for Glucoside of Methoxy-Hydroxymethyl-Furano-Chromome. The brand of the latter is marketed by a firm which has proposed the protected name Mefurone for its product. No objection was made to the designation, and the Council voted to recognize the stated terminology as detailed in the heading of this report.

ISOPROPYLARTERENOL HYDROCHLORIDE AND ISOPROPYLARTERENOL SULFATE GENERIC DESIGNATIONS RESPECTIVELY FOR ISUPREL HYDROCHLORIDE (Winthrop-Stearns, Inc.) AND ISONORIN SULFATE (Carroll Dunham Smith Pharmacal Co.).

The Council has accepted Isuprel Hydrochloride and has under consideration Isonorin Sulfate which are, respectively, hydrochloride and sulfate salts of the chemical 1-(3',4'-dihydroxy-phenyl)-2-isopropylaminoethanol.

In view of the fact that the parent compound of the drug is arterenol, the stated generic name is believed to be fitting since it accurately describes the chemical nature of the compound and indicates this relationship to the source.

THIOMERIN PROTECTED NAME AND MERCAPTOMERIN GENERIC DESIGNATION FOR N-(GAMMA-CARBOXY-METHYLMERCAPTOMERCURI-BETA-METHOXY) PROPYL CAMPHORAMIC ACID.

The Council has recognized the protected designation "Thiomerin Sodium" for a brand of the disodium salt of N-(gamma - carboxy - methylmercaptomercuri - beta - methoxy) propyl camphoramic acid as presented by Campbell Products, Inc.

The Council also recognized the generic designation "Mercaptomerin Sodium" for this compound.

PENTYLENETETRAZOLE GENERIC DESIGNATION FOR METRAZOL

The New and Nonofficial Remedies monograph for Metrazol has since its acceptance carried as a synonym the chemical name pentamethylenetetrazol. In accordance with its policy of adopting briefer generic terms suitable for use in prescriptions, the Council after extended consideration voted to recognize the term pentylenetetrazole as the generic name for this drug.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FORTY-NINTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., and Anne Tipner

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Introduction

This report is the forty-ninth annual compilation of information and statistics on medical education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association.

The statistics concerning medical schools, students and graduates, which have been regular features of this report, are presented as in former years. This year for the first time certain statistical data have been analyzed on the basis of whether the schools are privately or publicly owned. A number of subjects of current interest and importance are also discussed, including the survey of medical education, the number of unfilled positions on the instructional staffs of the schools, the plans of medical students for future practice, the financial support of medical education, new medical schools, instruction in the clinical aspects of nuclear energy and the deferment of medical students under the Selective Service Act.

As in previous years, the report presents a summary of the postgraduate and continuation courses that were offered in the United States during the last year.

The list of hospitals approved by the Council for internships, residencies and fellowships was published in the Internship and Residency Number of The Journal (May 14, 1949). Hospitals that have been approved since the publication of that number are listed in this issue. As announced in the Internship and Residency Number, hospitals approved for residency training in surgery have been reappraised and a revised list of approved residencies is published in this issue on pages 48 to 51.

The current requirements of the various American Boards have been summarized. Several of the examining boards have revised their requirements since the 1948 Educational Number was published. The requirements of three boards organized and approved since the publication of the 1948 Educational Number are presented for the first time.

The data published in the Educational Number are obtained from official reports. The Council and The Journal express their appreciation to the officers of the medical schools, hospitals and other institutions and agencies whose cordial and continuing cooperation makes possible the compilation and presentation of this body of fundamental information which is consulted each year by many individuals, organizations and governmental agencies interested in medical education in the United States and Canada.

Survey of Medical Education

During the past year plans were completed for the comprehensive survey of medical education in the United States to be conducted by the Committee for the Survey of Medical Education sponsored by the Council and the Association of American Medical Colleges. Dr. John E. Deitrick, associate professor of medicine, Cornell University Medical College, has been appointed director of the survey. Visits to the medical schools will begin in September 1949. This undertaking, the third major survey of medical education in the United States, should contribute significantly to the further development and progress of medical education.

One objective of the survey is to compile an accurate inventory of the present activities of the medical schools. Information of this type is constantly in demand, as evidenced by the number of questionnaires that are directed to the medical schools each year by individuals and organizations representing a wide variety of interests.

Important as will be the work of compiling detailed information concerning the medical schools, the major task of the survey will be to evaluate the adequacy of present day medical education, to draw attention to significant experiments and innovations, to point out deficiencies and to outline the path that medical edu-

TABLE 1.—*Approved Medical Schools in the United States*

	Name and Location of School	1950 Premedical Requirement in Years	Students by Classes 1948-1949						Graduates July 1, 1948 to June 30, 1949	Executive Officer	
			Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals‡			
	ALABAMA										
1	Medical College of Alabama, Birmingham	3	52	52	51	31	..	186	31	Roy R. Kracke, M.D., Dean	1
	ARKANSAS										
2	University of Arkansas School of Medicine, Little Rock	3	92	86	71	54	..	303	54	Henry Clay Chenault, M.D., Vice-President William C. Langston, M.D., Acting Dean	2
	CALIFORNIA										
3	University of California Medical School, Berkeley-San Francisco	3	72	68	76	67	..	283	65	Francis Scott Smyth, M.D., Dean, San Francisco	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	4	97	77	79	74	85	327	85	Harold Shryock, M.D., Dean, Loma Linda; Wm. F. Norwood, Ph.D., Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles	3	66	66	70	60	60	262	60	Burrell O. Raulston, M.D., Dean	5
6	Stanford University School of Medicine, Stanford University-San Francisco	3	63	60	59	60	59	242	59	Loren R. Chandler, M.D., Dean	6
	COLORADO										
7	University of Colorado School of Medicine, Denver	3	64	57	71	59	..	251	58	Robert C. Lewis, Ph.D., Dean	7
	CONNECTICUT										
8	Yale University School of Medicine, New Haven	3	65	69	46	51	..	231	47	C. N. Hugh Long, M.D., Dean	8
	DISTRICT OF COLUMBIA										
9	Georgetown University School of Medicine, Washington	Degree †	120	111	85	73	..	389	73	Rev. Paul A. McNally, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	3	92	81	78	69	..	320	69	Walter A. Bloedorn, M.D., Dean	10
11	Howard University College of Medicine, Washington	2	71	72	64	65	..	275	66	Joseph L. Johnson, M.D., Dean	11
	GEORGIA										
12	University of Georgia School of Medicine, Augusta	3	80	77	77	68	..	302	68	G. Lombard Kelly, M.D., Dean	12
13	Emory University School of Medicine, Emory University	3	73	65	56	40	..	234	39	R. Hugh Wood, M.D., Dean	13
	ILLINOIS										
14	Chicago Medical School	3	72	67	57	39	..	235	..	John J. Sheinin, M.D., Dean	14
15	Northwestern University Medical School, Chicago	3	128	125	142	130	132	525	130	Richard H. Young, M.D., Dean	15
16	Stritch School of Medicine of Loyola University, Chicago	3	90	81	69	55	..	295	53	James J. Smith, M.D., Dean	16
17	University of Chicago, The School of Medicine	3	72	61	58	55	..	246	55	Lowell T. Coggeshall, M.D., Dean, Division of Biological Sciences; A. C. Bachmeyer, M.D., Assoc. Dean; F. J. Mullin, Ph.D., Dean of Students	17
18	University of Illinois College of Medicine, Chicago	3	166	162	166	159	..	653	158	John B. Youmans, M.D., Dean	18
	INDIANA										
19	Indiana University School of Medicine, Bloomington-Indianapolis	3	150	112	95	81	..	438	81	John D. Van Nuys, Dean, Bloomington	19
	IOWA										
20	State University of Iowa College of Medicine, Iowa City	3	92	79	70	58	..	299	58	Robert T. Tidrick, M.D., Chairman, Executive Committee	20
	KANSAS										
21	University of Kansas School of Medicine, Lawrence-Kansas City	3 and Degree	84	83	85	82	..	334	82	Franklin D. Murphy, M.D., Dean, Kansas City	21
	KENTUCKY										
22	University of Louisville School of Medicine, Louisville	2	96	94	90	82	..	362	82	J. Murray Kinsman, M.D., Dean	22
	LOUISIANA										
23	Louisiana State University School of Medicine, New Orleans	3	101	91	72	58	..	322	58	William W. Frye, M.D., Dean	23
24	Tulane University of Louisiana School of Medicine, New Orleans	3	129	136	120	114	..	499	114	Maxwell E. Lapham, M.D., Dean	24
	MARYLAND										
25	Johns Hopkins University School of Medicine, Baltimore	Degree	79	69	73	72	..	293	73	Alan M. Chesney, M.D., Dean	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	3	98	89	82	68	..	337	69	H. Boyd Wylie, M.D., Dean	26
	MASSACHUSETTS										
27	Boston University School of Medicine, Boston	3	71	58	56	52	..	237	52	James M. Faulkner, M.D., Dean	27
28	Harvard Medical School, Boston	2	113	113	143	142	..	511	141	George Packer Berry, M.D., Dean	28
29	Tufts College Medical School, Boston	Degree	111	98	97	84	..	390	78	Dwight O'Hara, M.D., Dean	29
	MICHIGAN										
30	University of Michigan Medical School, Ann Arbor	3	147	118	96	108	..	469	107	A. C. Furstenberg, M.D., Dean	30
31	Wayne University College of Medicine, Detroit	3	68	65	57	37	..	227	37	Gordon H. Scott, Ph.D., Acting Dean	31
	MINNESOTA										
32	University of Minnesota Medical School, Minneapolis	3	125	122	95	84	122	426	124	Harold S. Diehl, M.D., Dean of Medical Sciences	32

	MISSOURI										
33	St. Louis University School of Medicine, St. Louis	3	123	113	105	90	..	431	90	Melvin A. Casberg, M.D., Dean	33
34	Washington University School of Medicine, St. Louis	3	86	83	86	96	..	351	96	Robert A. Moore, M.D., Dean	34
	NEBRASKA										
35	Creighton University School of Medicine, Omaha	3	75	69	64	40	..	248	39	Percy J. Carroll, M.D., Dean	35
36	University of Nebraska College of Medicine, Omaha	3	88	81	76	57	..	302	58	Harold C. Lueth, M.D., Dean	36
	NEW YORK										
37	Albany Medical College, Albany	3	50	45	50	41	..	186	41	R. S. Cunningham, M.D., Dean	37
38	Long Island College of Medicine, Brooklyn	3	113	105	97	101	..	416	101	Jean A. Curran, M.D., President; Duncan W. Clark, M.D., Dean	38
39	University of Buffalo School of Medicine, Buffalo	96 hrs.	71	64	75	49	..	259	49	Stockton Kimball, M.D., Dean	39
40	Columbia University College of Physicians and Surgeons, New York	3	114	106	105	111	..	436	108	Willard C. Rappleye, M.D., Dean	40
41	Cornell University Medical College, New York	3	84	81	83	71	..	319	69	Joseph C. Hinsey, Ph.D., Dean	41
42	New York Medical College, Flower and Fifth Avenue Hospitals, New York	3	124	124	103	95	..	446	95	J. A. W. Hetrick, M.D., President and Dean	42
43	New York University College of Medicine, New York	3	128	120	118	112	..	478	112	Currier McEwen, M.D., Dean	43
44	University of Rochester School of Medicine and Dentistry, Rochester	3	68	64	68	68	..	268	68	George H. Whipple, M.D., Dean	44
45	Syracuse University College of Medicine, Syracuse	3	56	50	39	46	..	191	46	H. G. Weiskotten, M.D., Dean	45
	NORTH CAROLINA										
46	Duke University School of Medicine, Durham	3	76	70	69	62	..	277	59	Wilburt C. Davison, M.D., Dean	46
47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	3	55	48	45	38	..	186	38	C. C. Carpenter, M.D., Dean	47
	OHIO										
48	University of Cincinnati College of Medicine, Cincinnati	3	90	81	77	79	..	327	78	Stanley Dorst, M.D., Dean	48
49	Western Reserve University School of Medicine, Cleveland	3	80	78	88	79	..	325	75	Joseph T. Wearn, M.D., Dean	49
50	Ohio State University College of Medicine, Columbus	3	88	78	72	84	..	322	84*	Charles A. Doan, M.D., Dean	50
	OKLAHOMA										
51	University of Oklahoma School of Medicine, Oklahoma City	3	64	65	76	54	..	259	54	Mark R. Everett, Ph.D., Dean	51
	OREGON										
52	University of Oregon Medical School, Portland	3	76	74	64	59	..	273	59	D. W. E. Baird, M.D., Dean	52
	PENNSYLVANIA										
53	Hahnemann Medical College and Hospital of Philadelphia	3	105	90	73	98	..	366	98	Charles L. Brown, M.D., Dean	53
54	Jefferson Medical College of Philadelphia	3	166	162	156	151	..	635	150	William Harvey Perkins, M.D., Dean	54
55	Temple University School of Medicine, Philadelphia	3	137	119	107	98	..	461	98	William N. Parkinson, M.D., Dean	55
56	University of Pennsylvania School of Medicine, Philadelphia	3	126	109	117	122	..	474	120	John McK. Mitchell, M.D., Dean	56
57	Woman's Medical College of Pennsylvania, Philadelphia	3	50	44	36	31	..	161	30	Marion Fay, Ph.D., Dean	57
58	University of Pittsburgh School of Medicine, Pittsburgh	3	86	78	71	68	..	303	68	William S. McEllroy, M.D., Dean	58
	SOUTH CAROLINA										
59	Medical College of the State of South Carolina, Charleston	3	60	57	57	42	..	216	42	Kenneth M. Lynch, M.D., Dean	59
	TENNESSEE										
60	University of Tennessee College of Medicine, Memphis	2	153	177	151	97	..	578	112	O. W. Hyman, Ph.D., Dean	60
61	Meharry Medical College, Nashville	2	69	56	63	43	..	231	43	Murray C. Brown, M.D., Director of Med. Education; Michael J. Bent, M.D., Dean	61
62	Vanderbilt University School of Medicine, Nashville	Degree	51	51	49	49	..	200	47	Ernest W. Goodpasture, M.D., Dean	62
	TEXAS										
63	Southwestern Medical School of the University of Texas, Dallas	3	64	58	60	56	..	238	56	W. Lee Hart, M.D., Dean	63
64	University of Texas School of Medicine, Galveston	3	110	97	98	69	..	374	69	Chauncey D. Leake, Ph.D., Vice Pres.; D. Bailey Calvin, Ph.D., Dean of Students and Curricular Affairs	64
65	Baylor University College of Medicine, Houston	3	91	76	77	62	..	306	62	W. H. Moursund, M.D., Dean	65
	UTAH										
66	University of Utah School of Medicine, Salt Lake City	138 qtr. hrs.	52	52	50	40	..	194	67*	H. L. Marshall, M.D., Acting Dean	66
	VERMONT										
67	University of Vermont College of Medicine, Burlington	3	40	36	37	35	..	148	34	William Eustis Brown, M.D., Dean	67
	VIRGINIA										
68	University of Virginia Department of Medicine, Charlottesville	3	74	68	64	56	..	262	56	Vernon W. Lippard, M.D., Dean	68
69	Medical College of Virginia, Richmond	3	84	76	98	68	..	326	68	Harvey B. Haag, M.D., Dean	69
	WISCONSIN										
70	University of Wisconsin Medical School, Madison	3	80	78	79	56	..	293	56	William S. Middleton, M.D., Dean	70
71	Marquette University School of Medicine, Milwaukee	3	100	102	93	82	..	377	73	John S. Hirschboeck, M.D., Dean	71
	Totals		6,409	5,949	5,702	5,086	458	23,146	5,091		

* Figures are for two graduating classes and include senior students reported in 1948 Educational Number. † Ninety semester hours for veterans. ‡ Intern enrolment not included in total column.

cation should follow in the years ahead to fulfil properly its responsibilities.

In last year's Educational Number, the broad objectives of the study were announced to be as follows:

To evaluate the present programs and determine the future responsibilities of medical education in its broadest aspects for the purpose of:

1. Improving medical education to better meet the over-all needs of the American people for:
    - *a.* The prevention of disease.
    - *b.* The restoration, so far as possible, to health of all those who suffer illness or injury.
    - *c.* The maintenance of the best standards of physical and mental health of all the people.
2. Assessing the degree to which medical schools are meeting the needs of the country for physicians.
3. Promoting the advancement of knowledge in the field of medical science.
4. Better informing the public concerning the nature, content and purposes of medical education.

The study should encompass:

1. An inventory of the existing situation.
2. Determination of the need for changes and improvements.
3. Conclusions and recommendations based on the foregoing.
4. Proposals for ways and means of carrying out the recommendations.

Under the detailed plan worked out during the past year, the survey will concentrate on fourteen major aspects of the medical schools' activities:

1. The objectives of the medical school (for each of the various fields in which it is active)
2. Organization and administration
3. Physical facilities
4. Finances
5. Faculty
6. Student body
7. Curriculum and teaching methods
8. Research
9. Graduate training
10. Postgraduate training
11. Hospital relationships
12. Community relationships
13. Alumni activities
14. Plans for future development

During the next two academic years teams composed of two to three men will visit each medical school in the United States, spending approximately five to ten days at each school. At the conclusion of the field work a comprehensive report will be prepared and published.

The members of the Committee are President Alan Valentine of the University of Rochester, chairman, Drs. Arthur C. Bachmeyer, Herman G. Weiskotten, Joseph C. Hinsey, Victor Johnson, Dean F. Smiley and Donald G. Anderson, secretary.

Approved Medical Schools

The seventy-one medical schools in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association are shown in table 1, the nine Canadian schools in table 2 and the eight approved schools of the basic medical sciences in the United States and Canada in table 3.

Since the publication of the 1948 Educational Number, the Chicago Medical School has been added to the approved list and the Hahnemann Medical College has been removed from probation.

The approval of the Chicago Medical School applied to all students who were regularly enrolled in the first four years of the medical school course at the time the school was approved in November 1948. The approval did not apply to previous graduates or to students in the required intern year who had completed their formal training at the school prior to the date on which it was approved. The Chicago Medical School does not grant the degree of Doctor of Medicine until the completion of a year of internship. The first class to graduate as graduates of an approved school will be the one that graduates in the spring of 1950.

The basic science schools of North Dakota and South Dakota remain on probation.

Three medical schools formerly privately owned by nonprofit corporations are merging with state universities during the coming academic year. Syracuse University College of Medicine and the Long Island College of Medicine will become parts of the State University of New York. The Southwestern Medical College on September 1, 1949 became a branch of the University of Texas and changed its name to the Southwestern Medical School of the University of Texas. No change of name has been announced by either Syracuse or Long Island.

The merging of these three schools with state universities will reduce the number of medical schools owned by private nonprofit corporations from forty-four to forty-one and will increase the number of publicly owned schools from thirty-four to thirty-seven.

Tables 1, 2 and 3 list the quantitative premedical requirements effective next year for each school, the enrolment by classes for the academic year 1948-1949 and the total attendance exclusive of students in the required intern year. The number of graduates from July 1, 1948 to June 30, 1949 is also given for each school.

For the Canadian schools enrolments are also given for premedical students in the medical school as well as for students in a fifth medical year and the required intern year.

The name of the dean or executive officer is given for each school. Changes have been made in the executive officers of eleven of the eighty-eight medical and basic science schools in the United States and Canada since the publication of the 1948 Educational Number. The following schools have appointed new executive officers: Arkansas, Colorado, Northwestern, Iowa, Louisville, Louisiana, Harvard, Wayne, St. Louis, Utah and the University of Virginia.

Medical School Calendars

This 1949 Educational Number presents data for the academic year beginning July 1, 1948 and ending June 30, 1949. During this period most schools followed conventional schedules with classes beginning in September or October and ending in May or June. The calendars of schools that present irregular schedules are summarized in table 4.

The freshman year in all schools except Utah began in either September of October. Utah admitted its freshman class in June. Tennessee admitted students quarterly. Only one school, Mississippi, admitted more than one freshman class. This school admitted classes in September and January.

The schedule for classes entering medical school in 1949 will be the same as that for the 1948 class except that Kansas is admitting its 1949 freshman class in June. One fifth of this class will not begin work until September under the plan of staggering the periods of instruction and vacation during the first year and a half of the medical school course.

Two schools graduated two classes during the academic year covered by this report. Ohio State graduated its last class on an accelerated program in December 1948 and graduated a second class on the conventional schedule in June 1949. Utah, although admitting only one class a year, is continuing to offer an accelerated program on an optional basis. This school graduated one class in August 1948 and a second class in June 1949.

Irregular graduation dates were reported by five other schools. Northwestern, the University of Chicago, Minnesota and Tennessee graduated students quarterly. Bowman Gray completed its accelerated program by graduating a class in December 1948. This school did not graduate a class in the spring of 1949. It will hold its next graduation in June 1950.

Except for the four schools that graduate students quarterly and the University of Utah which will graduate a few students on the accelerated program in September 1949, all schools will hold graduations in 1950 only in May and June.

During the past year all the Canadian schools followed regular schedules and will continue to do so for the coming academic year.

TABLE 2.—*Approved Medical Schools in Canada*

	Name and Location of School	1950 Premedical Requirement in Years	Students by Classes, 1918-1949								Totals*	Graduates July 1, 1948 to June 30, 1949	Executive Officer	
			First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year				
	ALBERTA													
1	University of Alberta Faculty of Medicine, Edmonton......	3	..	..	50	52	44	34	..	..	180	34	John W. Scott, M.D., Dean....	1
	MANITOBA													
2	University of Manitoba Faculty of Medicine, Winnipeg..	3	..	..	72	86	66	64	..	59	288	59	Alvin T. Mathers, M.D., Dean.	2
	NOVA SCOTIA													
3	Dalhousie University Faculty of Medicine, Halifax.........	2	..	..	58	54	57	46	..	43	215	43	H. G. Grant, M.D., Dean.......	3
	ONTARIO													
4	Queen's University Faculty of Medicine, Kingston	1	62	..	62	53	53	52	43	..	325	43	G. Spencer Melvin, M.D., Dean.	4
5	University of Western Ontario Faculty of Medicine, London	2	..	..	60	57	95	52	..	..	264	52	J. B. Collip, M.D., Dean.......	5
6	University of Toronto Faculty of Medicine, Toronto........	2	150	140	191	157	169	157	..	..	964	154	J. A. MacFarlane, M.B., Dean.	6
	QUEBEC													
7	McGill University Faculty of Medicine, Montreal	4	..	..	116	108	109	132	..	..	465	128	Frederick Smith, M.D., Dean..	7
8	University of Montreal Faculty of Medicine, Montreal..	1	..	..	122	97	98	82	..	83	399	83	Edmond Dubé, M.D., Dean....	8
9	Laval University Faculty of Medicine, Quebec	Degree	.	..	124	70	151	120	106	..	563	83	Charles Vézina, M.D., Dean....	9
	Totals......................		212	140	835	734	842	739	149	185	3,671	679		

* Intern enrolment not included in total column.

TABLE 3.—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

	Name and Location of School	1950 Premedical Requirement in Years	Students by Classes, 1948-1949			Executive Officer	
			Freshman	Sophomore	Total		
	MISSISSIPPI						
1	University of Mississippi School of Medicine, University..............	3	a 28 28	26 29	54 57	David S. Pankratz, M.D., Dean.........	1
	MISSOURI						
2	University of Missouri School of Medicine, Columbia..................	3	47	40	87	Trawick H. Stubbs, M.D., Dean.........	2
	NEW HAMPSHIRE						
3	Dartmouth Medical School, Hanover....................................	3	24	22	46	Rolf C. Syvertsen, M.D., Dean..........	3
	NORTH CAROLINA						
4	University of North Carolina School of Medicine, Chapel Hill.......	3	60	50	110	W. Reece Berryhill, M.D., Dean..........	4
	NORTH DAKOTA						
5	*University of North Dakota School of Medicine, Grand Forks.......	3	30	28	58	W. F. Potter, M.D., Dean................	5
	SOUTH DAKOTA						
6	*University of South Dakota School of Medical Sciences, Vermillion..	3	31	25	56	Donald Slaughter, M.D., Dean...........	6
	WEST VIRGINIA						
7	West Virginia University School of Medicine, Morgantown...........	3	31	25	56	Edward J. Van Liere, M.D., Dean.......	7
	CANADA						
8	University of Saskatchewan School of Medical Sciences, Saskatoon...	2	32	31	63	W. S. Lindsay, M.B., Dean..............	8
	Totals.....................................		311	276	587		

a. Beginning date of additional freshman class January 3, 1949. * On probation.

Graduates

The last columns of tables 2 and 3 give the number of graduates from each medical school in the United States and Canada respectively from July 1, 1948 to June 30, 1949. During this period, 5,094 physicians were graduated from medical schools in the United States and 679 from the schools in Canada. The total number of students and graduates in the United States for each academic year since 1905 are reported in table 5.

As predicted in the 1948 Educational Number, the class of 1949 is the smallest graduating class in ten years. The small number of graduates is accounted for by the fact that when this class was admitted to the medical schools during the academic year 1945-1946, it was the smallest freshman class since 1940. This class was selected during the last year of the war when there was no provision for the deferment of premedical students by the Selective Service System;

As a consequence, medical schools were unable to find a sufficient number of qualified students to fill the available places in their freshman classes.

The enrolments in the senior class for 1949-1950 would indicate that there will be approximately 5,600 graduates in 1949-1950, which will be a larger graduating class than any except those that graduated in 1946 and 1947 at the culmination of the war time accelerated program when several schools graduated two classes in one year.

The schools with the largest number of graduates during 1948-1949 were Illinois 158, Jefferson 150, Harvard 141, and Northwestern 130. Sixteen schools graduated fewer than 50 students in one class. The schools with the smallest number of graduates in a single class were Woman's Medical 30, Utah 30, and Alabama 31.

In Canada, Toronto had the largest number of graduates, 154. Alberta with 34, Queen's with 43, and Dalhousie with 43 had the fewest graduates.

TABLE 4.—*Admission and Graduation Calendars of Medical Schools with Irregular Schedules*

(Blank space indicates class is on regular schedule)

	Dates of Freshman Classes Included in this Educational Number	Dates of Next Two Entering Classes		Dates of Graduating Classes Included in this Educational Number	Dates of Next Two Graduating Classes	
		1949	1950		1949	1950
Northwestern University Medical School (Illinois)	—	—	—	Quarterly	Quarterly	Quarterly
University of Chicago School of Medicine	—	—	—	Quarterly	Quarterly	Quarterly
University of Kansas School of Medicine	—	June	June	June	—	June
University of Minnesota Medical School	—	—	—	Quarterly	Quarterly	Quarterly
University of Mississippi School of Medicine*	9-20-48 1- 3-49	9-5	1-30	—	—	—
Bowman Gray School of Medicine (North Carolina)	—	—	—	12-19-48	—	June
Ohio State University College of Medicine	—	—	—	12-17-48 6-10-49	—	June
University of Tennessee College of Medicine	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
University of Utah School of Medicine	*6-10-48*	*June*	*June*	Aug. 1948 June 1949	*September*	*June*

* School of the Basic Medical Sciences.

Of the total of 5,773 graduates in the United States and Canada during 1948-1849, 48.3 per cent possessed a baccalaureate degree. The number and percentage of graduates with a baccalaureate from each medical school are shown in table 6.

Enrolments 1948-1949

The total enrolment, excluding students taking a required intern year, in the seventy-one medical and seven basic science schools in the United States for the year 1948-1949 was 23,670. Although, as already pointed out, the graduating class was unusually small, the total enrolment was the fourth largest in American medical schools in modern years. The freshman class was the largest class ever admitted to the medical schools of the United States. Numbering 6,688 this class was 3 per cent larger than the 1947 freshman class.

The total enrolment for 1948-1949 represents an increase of 931 students, or 4.1 per cent, over the enrolment of the previous academic year and an increase of 2,143, or 10 per cent, over the average enrolment during the five year period 1937-1941 immediately preceding the war.

The enrolment figures for the academic year 1948-1949 for the individual schools are given in tables 1, 2, and 3. The total enrolments by classes in the medical and basic science schools in the United States and Canada are recapitulated in table 7.

The total enrolment in the Canadian schools, including one basic science school, was 3,233, an increase of 133 over the preceding session. In addition there were 352 premedical and 149 fifth (not intern) year students in the Canadian schools. These students are included in the "total" column of table 2, but not in the total column of table 7.

There were 458 students in the required intern year in the United States and 185 in Canada. The total number of students in the United States taking a required intern year is shown in table 8 for each academic year since 1930-1931.

In table 9, the seventy-one medical schools of the United States are arranged in the order of the size of their student bodies. The median enrolment for these schools was 303, the average enrolment 313.

Five medical schools in the United States had more than 500 students, excluding those in the intern year. Illinois with 653 students had the largest enrolment, Jefferson had 635, Tennessee 578, Northwestern 525 and Harvard 511.

Six schools had enrolments under 200. Vermont had 148 students, Woman's Medical 161, Alabama 186, Albany 186, Syracuse 191 and Utah 194.

In Canada, Toronto with 674 students had the largest enrolment. This figure does not include 290 students in the premedical years. The Canadian school having the smallest enrolment was Alberta with 180 students.

The total enrolment in the schools of the basic medical sciences in this country was 524. Mississippi with 111 students and North Carolina with 110 had the largest enrolments.

In table 10, the total enrolments in the various classes in the medical and basic science schools in the United States are recorded for each academic session since 1930-1931. During the 1948-1949 session there were 201 more freshmen, 436 more sophomores, 548 more juniors and 254 fewer seniors than were reported in 1947-1948.

It should be noted that prior to 1942-1943 the totals shown in table 10 are somewhat higher than the sum of the figures for the various classes in a given year. The discrepancy resulted from the inability of certain schools strictly to classify their students into the conventional graded classes.

Distribution of Students by Sex

In table 11 the students enrolled in all the medical and basic science schools in the United States and Canada during the academic year 1948-1949 are classified according to sex. Graduates of the medical schools during the period July 1, 1948 to June 30, 1949 are also classified according to sex in the same table. In this period 612 women were graduated from the medical schools of the United States. The largest number graduated in any previous year was 392 in 1948. Table 12 shows the numbers and percentages of women medical students and graduates in the United States since 1905.

In 1948-1949 women totaled 2,109, or 8.9 per cent of the medical students in this country. The total is 50 less than for the preceding year, and the percentage represents a fall of 0.6 per cent. The percentage of women in the freshman class decreased from 7.9 per cent in the preceding year to 6 per cent. The actual number declined from 514 to 407.

Table 5.—*Schools, Students and Graduates in the United States, 1905-1949*

Students in the required intern year are not included

	Schools	Students *	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,891	3,536
1920	85	13,798	3,047
1921	83	14,466	3,186
1922	81	15,635	2,529
1923	80	16,960	3,120
1924	79	17,728	3,562
1925	80	18,200	3,974
1926	79	18,840	3,962
1927	80	19,662	4,035
1928	80	20,545	4,262
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,095	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,031	5,163
1943	76	22,631	5,223
1944	77	23,529	5,134
1944 (second session)	77	24,666	5,169
1945 (to June 30)	77	24,028	5,136
	77	23,216	5,826
	77	23,900	6,389
	77	22,739	5,543
1949 (to June 30)	78	23,670	5,094

* Includes figures for schools of the basic medical sciences.
† Includes figures for additional classes.

Only three schools, Dartmouth, Jefferson and North Dakota had no women students. St. Louis admitted women students for the first time during 1948-1949. One school, the Woman's Medical College, had no men students.

The number of schools in addition to the Woman's Medical College enrolling more than 30 women students increased from twenty-four to twenty-six during the year 1948-1949. Five years ago only seven schools were in this category. From figures presently available it is estimated that about 6 per cent of the entering class in 1949 will be women.

In Canada women numbered 216, or 6.7 per cent of the total enrolment.

Veterans in Medical Schools

The percentage of veterans enrolled in the medical schools and schools of the basic medical sciences in the United States increased from 60.9 per cent in the preceding year to 65.8 per cent in 1948-1949. Of the total of 23,670 students 15,567 were veterans. Eighty-nine of the veterans were women.

Table 6.—*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1948 to June 30, 1949*

	Graduates	Degrees	Per Cent with Degrees
Medical College of Alabama	31	19	61.3
University of Arkansas	54	24	44.4
University of California	65	52	80.0
College of Medical Evangelists	85	35	41.2
University of Southern California	60	21	35.0
Stanford University	59	59	100.0
University of Colorado	58	34	58.6
Yale University (Connecticut)	47	28	59.6
Georgetown University (D. C.)	73	19	26.0
George Washington University	69	35	50.7
Howard University	66	49	74.2
Emory University (Georgia)	39	19	48.7
University of Georgia	68	22	32.3
Northwestern University (Illinois)	130	97	74.6
Stritch School of Medicine	53	20	37.7
University of Chicago	55	45	81.8
University of Illinois	158	141	89.2
Indiana University	81	59	72.8
State University of Iowa	58	17	29.3
University of Kansas	82	58	70.7
University of Louisville (Kentucky)	82	42	51.2
Louisiana State University	58	22	37.9
Tulane University of Louisiana	114	46	40.4
Johns Hopkins University (Maryland)	73	41	56.2
University of Maryland	69	25	85.5
Boston University (Massachusetts)	52	22	42.3
Harvard Medical School	141	61	43.3
Tufts College Medical School	78	40	51.3
University of Michigan	107	65	60.7
Wayne University	37	21	56.7
University of Minnesota	124	122	98.1
St. Louis University (Missouri)	90	27	30.0
Washington University	96	45	46.9
Creighton University (Nebraska)	39	17	43.6
University of Nebraska	58	35	60.3
Albany Medical College (New York)	41	12	28.6
Long Island College of Medicine	101	52	51.5
University of Buffalo	49	26	53.1
Columbi	108	75	69.4
Cornell	69	37	53.6
New Yor	95	48	50.5
New Yor	112	63	56.2
University of Rochester	68	33	48.5
Syracuse University	46	27	58.7
Duke University (North Carolina)	59	19	32.2
Bowman Gray School of Medicine	38	17	44.7
University of Cincinnati (Ohio)	78	41	52.6
Western Reserve University	75	42	56.0
Ohio State University	84*	61	72.6
University of Oklahoma	54	23	42.6
University of Oregon	59	59	100.0
Hahnemann Med. College (Pennsylvania)	98	54	55.1
Jefferson Medical College	150	72	48.0
Temple University	98	51	52.0
University of Pennsylvania	120	57	47.5
Woman's Medical College	30	29	96.7
University of Pittsburgh	68	50	73.5
Medical College of South Carolina	42	26	61.9
University of Tennessee	112	41	36.6
Meharry Medical College	43	34	79.1
Vanderbilt University	47	29	61.7
Southwestern Medical School (Texas)	56	26	46.4
Baylor University	62	14	22.6
University of Texas	69	23	33.3
University of Utah	67*	53	79.1
University of Vermont	34	12	35.3
Medical College of Virginia	68	37	54.4
University of Virginia	56	25	44.6
University	56	56	100.0
Marquette	73	41	56.2
University	34	33	97.1
University of Manitoba	59	18	30.5
Dalhousie University	43	14	32.6
Queen's University	43	7	16.3
University of Western Ontario	52	16	30.8
University of Toronto	154	25	16.2
	128	103	80.5
	83	83	100.0
	83	73	88.0
Totals	5,773	3,187	48.3

* Includes two classes.

In table 13 the composition of the student body of the medical schools and schools of the basic medical sciences in this country is recapitulated by classes. Veterans comprised 70 per cent of the freshman class, a slight decline from the peak enrolment of 73.4 per cent veterans in the preceding freshman class. The figure for veterans in other classes were sophomores 73.9 per cent, juniors 65.2 per cent and seniors 50.9 per cent.

Geographic Source of Freshman Students 1948-1949

The residence of students in the 1948-1949 freshman class of each medical and basic science school in the United States and Canada is shown in table 14. It is recognized that the residence of certain students may be of brief duration, so that their real geographic source may not be revealed by their residence on entering medical school. On the other hand, the birth place of students is probably no better a criterion of geographic origin since appreciable numbers of persons have permanent residence elsewhere than in the states of their birth. Table 14 reports the residence of 846 freshmen in Canadian schools. This figure differs somewhat from freshman enrolment figures given in other tables because table 14 employs the figure for the first class of premedical students at Queen's and Toronto since these students are already registered in those schools.

TABLE 7.—*Total Enrolments by Classes in Medical Schools of the United States and Canada for the 1948-1949 Session*

Students in the required intern year are not included.

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session
71 Medical Schools (U. S.)	6,409	5,949	5,702	5,086	23,146	22,248
7 Basic Science Schools (U. S.)	279	245	.....	.....	524	491
Totals (U. S.)	6,688	6,194	5,702	5,086	23,670	22,739
9 Medical Schools (Canada)	855	734	842	739	3,170*	3,045†
1 Basic Science School (Canada)	32	31	...	...	63	55
Totals (Canada)	887	765	842	739	3,233*	3,100†
Grand Totals (U. S. and Canada)	7,575	6,959	6,544	5,825	26,903	25,839

* Does not include 352 premedical and 149 fifth year students.
† Does not include 398 premedical and 84 fifth year students.

TABLE 8.—*Students in the Required Intern Year in the United States, 1931-1949*

1930-1931	1,025
1931-1932	1,067
1932-1933	1,106
1933-1934	1,183
1934-1935	1,233
1935-1936	1,213
1936-1937	1,255
1937-1938	1,132
1938-1939	1,152
1939-1940	1,152
1940-1941	1,058
1941-1942	767
1942-1943	639
1943-1944	451
1944 (Second session)	447
1944-1945	452
1945-1946	488
1946-1947*	582
1947-1948	447
1948-1949	458

* Includes additional class.

In the last two Educational Numbers attention has been called to a developing trend for medical schools, particularly those supported by states and municipalities, to limit closely the admission of students to residents of the state in which the schools are located. The statistics for this year indicate that this trend is continuing.

It is well known that this policy does not have the approval of the administrations and faculties of most of the schools concerned. In general restrictions have been adopted as the result of direct or indirect pressure from the governmental agencies controlling the allocation of funds to the institutions. The most serious effect on medicine and medical education of such a policy is the fact that in several states superior out of state students are being denied admission in favor of less well qualified resident students. The consequence of this development is to lower the caliber and quality of the medical profession, particularly in the states that apply such restrictions.

TABLE 9.—*Medical Schools of the United States in Order of Size of Total Enrolments for 1948-1949*

University of Illinois	653
Jefferson Medical College	635
University of Tennessee	578
Northwestern University	525
Harvard Medical School	511
Tulane University	499
New York University	478
University of Pennsylvania	474
Universit	469
Temple	461
New York Medical College	446
Indiana	438
Columbia	436
St. Louis	431
Universit	426
Long Isl	416
Tufts Co	390
Georgeto	389
Marquett	377
University of Texas	374
Hahnemann Medical College	366
University of Louisville	362
Washington University	351
University of Maryland	337
University of Kansas	334
College of Me	327
University of	327
Medical Colleg	326
Western Reser	325
Louisiana Sta	322
Ohio State University	322
George Washington University	320
Cornell University	319
Baylor University	306
University of Arkansas	303
University of Pittsburgh	303
University of Georgia	302
University of Nebraska	302
State University of Iowa	299
Stritch School of Medicine	295
Johns Hopkins University	293
University of Wisconsin	293
University of California	283
Duke University	277
Howard University	275
University of Oregon	273
University of Rochester	268
University of Southern California	262
University of Virginia	262
University of Buffalo	259
University of Oklahoma	259
University of Colorado	251
Creighton University	248
University of Chicago	246
Stanford University	242
Southwestern Medical School	238
Boston University	237
Chicago Medical School	235
Emory University	234
Yale University	231
Meharry Medical College	231
[illegible]	227
[illegible]	216
[illegible]	200
University of Utah	194
Syracuse University	191
Medical College of Alabama	186
Albany Medical College	186
Bowman Gray School of Medicine	186
Woman's Medical College	161
University of Vermont	148
Totals	23,146

In table 15 is shown the number of first year medical students from each state per hundred thousand inhabitants. For the nation as a whole there were 4.7 freshman medical students per hundred thousand inhabitants. The twelve states without medical or basic science schools had an average of 3.4 first year students per hundred thousand population. Those states with medical or basic science schools had an average of 5.2 students per hundred thousand of population enrolled as freshmen. This is the third successive year in which states with medical schools have sent a significantly larger proportion of their population to medical schools than the states without medical schools. Prior to 1946-1947, statistics showed that states with and states without medical schools sent almost identical proportions of their populations to medical schools.

Of the total of 2,801 freshman students admitted by state and municipal schools during the current year only 229, or 8.2 per cent, were nonresidents. Two years ago 14.8 per cent of freshman students in these schools were nonresidents, while last year only 9.8 per cent were out of state students. In 1941-1942 the last prewar year, the freshman enrolment of the state and municipal schools included 17.4 per cent of out of state students.

The privately owned medical schools admitted a total of 3,887 students during the current year. The number of out of state students in this group was 1,980, or 50.9 per cent. Last year the freshman classes in this group of schools had 51.3 per cent of nonresidents and in the previous year 51.4 per cent. In 1941-1942, these schools enrolled 52.9 per cent nonresident students.

In table 16 is recapitulated the number of resident students from other states, students from the outlying territories and possessions of the United States, Canadian students and foreign students enrolled in the 1948-1949 freshman class in each school in the United States and Canada.

The number of schools that admitted no out of state students increased from nine during the preceding year to thirteen during the current year. Two years ago only six schools limited their admissions to residents, while in the two preceding years every medical school in the United States accepted some out of state students.

Five schools admitted only one or two nonresidents, the same number as last year. Twenty-one schools, one less than last year, admitted more nonresident than resident students.

There were 57 freshman students, 14 fewer than last year and 28 fewer than two years ago, from the outlying territories and possessions of the United States. All but 2 of these students were enrolled in schools in the United States.

TABLE 10.—*Students in the Medical and Basic Science Schools in the United States, 1931-1949*

Students in the required intern year are not included

	Freshman	Sophomore	Junior	Senior	Total
1930-1931	6,456	5,538	5,080	4,908	21,982
1931-1932	6,260	5,462	4,932	4,885	22,135
1932-1933	6,426	5,479	5,017	4,948	22,466
1933-1934	6,457	5,571	4,988	4,937	22,799
1934-1935	5,356	5,624	5,142	4,905	22,888
1935-1936	6,605	5,458	5,230	5,020	22,564
1936-1937	5,910	5,269	5,140	5,158	22,695
1937-1938	5,791	5,225	4,986	5,036	21,587
1938-1939	5,764	5,160	4,947	4,921	21,302
1939-1940	5,794	5,177	4,921	4,894	21,271
1940-1941	5,837	5,254	4,969	4,849	21,379
1941-1942	6,218	5,406	5,087	4,942	22,031
1942-1943	6,425	5,828	5,278	5,100	22,631
1943-1944	6,561	6,071	5,640	5,257	23,529
1944 (second session)	6,618	6,140	6,084	5,794	24,666
1944-1945	6,523	5,979	5,700	5,826	24,028
1945-1946	6,060	5,750	5,751	5,655	23,216
1946-1947*	6,564	5,575	5,767	5,994	23,900
1947-1948	6,487	5,758	5,154	5,340	22,739
1948-1949	6,688	6,194	5,702	5,086	23,670

* Includes additional classes.

TABLE 11.—*Distribution of Students and Graduates by Sex in the United States and Canada, 1948-1949*

	Students		Graduates	
	Men	Women	Men	Women
Medical College of Alabama	171	15	24	7
University of Arkansas	289	14	50	4
University of California	247	36	51	14
College of Medical Evangelists	288	39	83	2
University of Southern California	246	16	58	2
Stanford University	220	22	53	6
University of Colorado	228	23	52	6
Yale University (Connecticut)	203	28	43	4
Georgetown University (D. C.)	371	18	72	1
George Washington University	289	31	59	10
Howard University	233	42	52	14
Emory University (Georgia)	225	9	37	2
University of Georgia	292	10	66	2
Chicago Medical School (Illinois)	225	10	..	..
Northwestern University	497	28	124	6
Stritch School of Medicine	277	18	49	4
University of Chicago	215	31	49	6
University of Illinois	586	67	135	23
Indiana University	410	28	74	7
State University of Iowa	267	32	49	9
University of Kansas	309	25	74	8
University of Louisville (Kentucky)	346	16	79	3
Louisiana State University	294	28	51	7
Tulane University of Louisiana	460	39	103	11
Johns Hopkins University (Maryland)	258	35	65	8
University of Maryland	308	29	60	9
Boston University (Massachusetts)	217	20	43	9
Harvard Medical School	479	32	129	12
Tufts College Medical School	353	37	64	14
University of Michigan	416	53	90	17
Wayne University	221	6	34	3
University of Minnesota	393	33	111	13
University of Mississippi	108	3	..	..
University of Missouri	80	7	..	..
St. Louis University	429	2	90	0
Washington University	320	31	88	8
Creighton University (Nebraska)	230	18	34	5
University of Nebraska	283	19	54	4
Dartmouth Med. School (New Hampshire)	46	0	..	..
Albany Medical College (New York)	165	21	36	5
Long Island College of Medicine	364	52	84	17
University of Buffalo	237	22	43	6
Columbia University	379	57	85	23
Cornell University	282	37	58	11
New York Medical College	372	74	75	20
New York University	406	72	90	22
University of Rochester	240	28	56	12
Syracuse University	162	29	33	13
University of North Carolina	163	7	..	..
Duke University	257	20	51	8
Bowman Gray School of Medicine	173	13	35	3
University of North Dakota	58	0	..	..
University of Cincinnati (Ohio)	301	26	67	11
Western Reserve University	289	36	66	9
Ohio State University	302	20	74	10
University of Oklahoma	236	23	43	11
University of Oregon	252	21	55	4
Hahnemann Med. College (Pennsylvania)	323	43	84	14
Jefferson Medical College	635	0	150	0
Temple University	411	50	84	14
University of Pennsylvania	434	40	109	11
Woman's Medical College	0	161	0	30
University of Pittsburgh	283	20	62	6
Medical College of South Carolina	204	12	34	8
University of South Dakota	55	1	..	..
University of Tennessee	552	26	106	6
Meharry Medical College	206	25	32	11
Vanderbilt University	186	14	45	2
Southwestern Medical School (Texas)	218	20	47	9
University of Texas	340	34	58	11
Baylor University	288	18	59	3
University of Utah	184	10	60	7
University of Vermont	130	18	29	5
University of Virginia	253	9	54	2
Medical College of Virginia	295	31	57	11
West Virginia University	52	4	..	..
University of Wisconsin	253	40	47	9
Marquette University	352	25	65	8
University of Alberta (Canada)	167	13	31	3
University of Manitoba	263	25	52	7
Dalhousie University	206	9	42	1
Queen's University *†	205	15	41	2
University of Western Ontario	249	15	49	3
University of Toronto *	597	77	123	31
McGill University	433	32	121	7
University of Montreal	380	19	79	4
Laval University †	457	8	83	0
University of Saskatchewan	69	3	..	..
Totals	24,578	2,325	5,103	670

* Excludes 62 and 290 premedical students respectively.
† Excludes 43 and 105 fifth year students respectively.

Seventeen students from Canada, 5 less than last year, were enrolled as freshmen in schools in this country. Forty-two students from other foreign countries, 16 fewer than a year ago, were enrolled in the freshman classes in twenty-four medical schools in the United States.

Of the 846 beginning students in the Canadian schools, 33 came from the United States, 14 more than in the preceding year. Canadian schools enrolled 4 beginning students from other foreign countries.

Required Internships

TABLE 12.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (second session)	1,141	4.6	252	4.9
1945 (to June 30)	1,352	5.6	262	5.1
1946 (to May 31)	1,868	8.0	242	4.2
1947 (to June 30)*	2,183	9.1	342	5.4
1948 (to June 30)	2,159	9.5	392	7.1
1949 (to June 30)	2,109	8.9	612	12.1

* Includes additional classes.

TABLE 13.—*Enrolment by Classes of Veterans and Non-Veterans in the Medical and Basic Science Schools in the United States, 1948-1949*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	4,665	1,616	6,281	21	386	407	6,688
Sophomores	4,544	1,178	5,722	29	443	472	6,194
Juniors	3,686	1,420	5,106	34	562	596	5,702
Seniors	2,583	1,869	4,452	5	629	634	5,086
Totals	15,478	6,083	21,561	89	2,020	2,109	23,670

The medical schools that require their students to serve an internship are shown in table 17. Seven schools in the United States and three in Canada have this requirement. All except one of these schools withholds the degree of Doctor of Medicine until the year of internship has been served. Duke issues the degree at the end of the four year medical school course, but obtains from each student a written agreement that he will spend two years in training in a hospital or laboratory. Several of the other schools requiring an internship will accept a year of laboratory work in lieu of an internship.

While most medical schools do not require an internship of their students, it has been well known for many years that more than 99 per cent of all graduates voluntarily serve an internship of at least one year's duration and that the majority take at least one additional year of hospital training before entering the practice of medicine.

In last year's Educational Number it was incorrectly reported that Queen's had instituted a required internship for classes entering in September 1947 and subsequently. While the work of the sixth year at this medical school has been reorganized so that the student spends the year in a hospital designated by the University, the medical school does not consider this year to be an internship.

During the academic year 1948-1949 there were 458 students from schools in this country and 185 from Canada in the required year of internship training or research. The number of students from schools in this country in the required intern year is shown for each year since 1930-1931 in table 8.

States requiring the internship for licensure are listed in table 18. There are now twenty-four such states, Arizona having instituted this requirement during the past year. In addition, the District of Columbia, Alaska, Hawaii, the Virgin Islands and the Canal Zone require a year of internship for licensure. Puerto Rico requires a two year internship. The licensing boards of the Canal Zone, Delaware, Hawaii, Idaho, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Puerto Rico, Rhode Island, Utah, Vermont and Washington require the internship to be a rotating service.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require internship training withhold the licenses of candidates from schools requiring an internship for the degree of Doctor of Medicine until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

Some states in addition to those listed in table 18 require an internship of graduates from schools outside the United States and Canada and of applicants for reciprocity or endorsement.

The hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure. The current list of approved internships was published in the May 14, 1949, issue of THE JOURNAL.

Additions to this list appear on page 48 of this issue.

Graduate, Part Time and Special Students

In table 19 are listed for the United States and Canada those students other than regular medical students and students in a required intern year who were pursuing courses in the medical schools in 1948-1949.

Thirty-one medical schools in the United States enrolled 1,133 physicians who were working toward advanced degrees. Six Canadian schools had 106 physicians enrolled for similar work. Minnesota with 393 reported the largest number of such students.

Other graduate students who were working for advanced degrees in the basic medical sciences numbered 1,765 in the United States and 43 in Canada. These students were distributed among 49 schools in the United States and six schools in Canada. The largest number, 213, was at Minnesota.

The total number of graduate students in the two categories previously described in the United States was 2,898. This figure may be compared with the highest prewar total of graduate students, 1,167, which was reported for the academic year 1940-1941 as an indication of the expansion that is taking place in the graduate study of the medical sciences.

In addition to the students working for advanced degrees, there were 2,039 other nonmedical students taking courses in the medical schools of the United States and 36 in Canada. This number, which largely represents students from other departments of the universities, such as dentistry, public health, nursing, engineering and the arts courses, is probably less than the actual total of students who receive training through the facilities and from the faculties of the medical schools, since several schools which are known to accommodate students from other departments of the University reported no students in this category.

Forty medical schools in the United States reported a total of 1,697 physicians enrolled in formal basic science courses in preparation for certification by a specialty board. This total does not include persons reported under the category of physicians working for advanced degrees who might also be preparing for certification. The highest enrolment in formal basic science courses preparatory for certification was reported by Michigan with 253 students. There was a total of 110 students enrolled in similar courses in three Canadian schools.

Forty-nine medical schools in the United States reported a total enrolment of 15,695 physicians in refresher or continuation courses. Five Canadian schools reported a total enrolment of 691 students in courses of this type.

Ninety-three part time or special students working toward the degree of Doctor of Medicine were enrolled in thirty-three medical schools in the United States. Two such students were reported by one Canadian school.

The students reported in the foregoing categories total 22,422 for the medical schools in the United States and 988 for the Canadian schools. As pointed out in last year's Educational Number, this is impressive evidence that the educational responsibilities of the medical schools extend far beyond the undergraduate student body. The number of other students now almost equals the number of undergraduate medical students. If all schools had submitted complete reports and if the interns and residents who receive clinical instruction from medical school departments were included, the total would probably exceed the number of undergraduate students. It should thus be clear that the relatively elaborate physical plants, large faculties and budgets of the medical schools are not merely serving undergraduate medical education but are also being employed in the interest of other major educational activities.

Premedical Training

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college training. In 1938 the Council recommended that at least three years of college work be required of all candidates for admission. With the exception of California, the state licensing boards require that an applicant for licensure must present evidence of having completed two years of college. Seventy-three of the seventy-eight medical and basic science schools of the United States require three or more years of premedical work. Four of the Canadian schools have a similar requirement. Six schools, Georgetown, Johns Hopkins, Tufts, Vanderbilt, Kansas and Laval require a bachelor's degree. Georgetown, however, requires only ninety semester hours of college work from veterans. Vanderbilt and Kansas will accept students with three years of college work provided their colleges will grant them a bachelor's degree on the successful completion of the first year of medical school.

Statistics for the freshman class that entered medical school during the past academic year reveal that 3,695, or 55.4 per cent of the freshmen students in the schools of this country, had baccalaureate degrees; 560, or 8.3 per cent, had attended college for four years but had received no degree; 2,379, or 35.5 per cent, had had three years of college work, and only 54, or 0.8 per cent, had had only two years of college.

The 1949 Freshman Class

As already pointed out, the 1948 freshman class was the largest freshman class ever admitted to the medical schools of the United States. Figures submitted by the individual schools indicate that the 1949 freshman class will surpass the 1948 class by approximately 200 students and may number as many as 6,900 students, to set still another new record for freshman enrolments.

By June of this year, the schools had selected 6,595 students. This group included 3,991 male veterans (60.5 per cent), 2,213 other men (33.6 per cent) and 391 women (5.9 per cent). Fourteen of the women were veterans.

These figures confirm the trend predicted in last year's Educational Number, that the 1947 freshman class with 73.4 per cent veterans marked the peak of the entrance of veterans of World War II into the medical schools.

New Medical Schools

The University of Washington School of Medicine in Seattle will have completed the organization of its full four year program during the coming academic year and will graduate its first class in the Spring of 1950. This school has requested approval by the Council and the Association of American Medical Colleges and will be visited by representatives of these bodies after all four classes are in attendance. The Council announced in the Internship and Residency Number of The Journal (May 14, 1949) that, pending action by the Council, students who graduate from the University of Washington School of Medicine in 1950 will be considered for purposes of internship appointment as if they had graduated from an approved medical school. Hospitals approved for intern training will not lose their approved status if they accept these students for internship.

The 1949 Florida legislature passed an act authorizing the establishment of a medical school as part of the University of Florida at Gainesville. No funds were appropriated, however.

In West Virginia the 1949 legislature authorized the establishment of an interim committee to study the entire problem of medical education in West Virginia, including the possibility of establishing a four year school. This committee will report to the next legislature which meets in January 1951.

The Mississippi State Medical Association and the faculty of the University of Mississippi School of Medicine voted unanimously during the past year to request the establishment of a four year medical school. The governor of the state has announced that he is in favor of the project. The chancellor of the university has appointed a committee to study the problem, and it is hoped that the 1950 legislature will appropriate funds to finance the necessary construction.

TABLE 14.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 District of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa
1	Medical College of Alabama	52	..	..	..	..	..	..	..	..	..	..	..	..	..
2	University of Arkansas School of Medicine	..	..	92	..	..	..	..	..	..	..	..	..	..	..
3	University of California Medical School	..	..	..	71	..	..	..	..	..	..	..	..	..	..
4	College of Medical Evangelists	..	..	1	17	2	1	..	1	2	2	..	2	4	3
5	University of Southern California School of Medicine	..	1	..	63	..	..	..	..	..	..	..	..	..	..
6	Stanford University School of Medicine	..	2	..	53	..	..	..	..	..	..	1	..	..	..
7	University of Colorado School of Medicine	..	..	..	..	64	..	..	..	..	..	..	..	..	..
8	Yale University School of Medicine	..	..	1	5	..	11	..	..	1	..	..	6	2	1
9	Georgetown University School of Medicine	..	..	..	4	..	5	1	4	1	..	..	1	1	..
10	George Washington University School of Medicine	1	..	..	7	..	..	..	24	2	1	..	..	3	2
11	Howard University College of Medicine	2	..	..	1	..	1	..	7	4	..	..	1	..	..
12	Emory University School of Medicine	3	..	..	..	..	..	..	..	10	49	..	..	..	..
13	University of Georgia School of Medicine	..	..	..	..	..	..	..	..	..	80	..	..	..	..
14	Chicago Medical School	..	..	..	..	..	..	..	..	1	..	..	13	..	..
15	Stritch School of Medicine of Loyola University	..	..	..	4	1	..	..	..	1	..	1	57	4	1
16	Northwestern University Medical School	1	..	..	3	2	..	..	..	..	..	..	53	13	5
17	University of Chicago, The School of Medicine	..	..	..	8	1	1	..	1	..	..	1	33	2	1
18	University of Illinois College of Medicine	..	..	..	1	..	..	..	..	..	..	..	161	..	..
19	Indiana University School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	144	..
20	State University of Iowa College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	91
21	University of Kansas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	University of Louisville School of Medicine	..	..	..	..	..	..	..	1	..	..	..	..	2	..
23	Louisiana State University School of Medicine	3	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Tulane University of Louisiana School of Medicine	24	..	4	..	..	..	..	..	10	1	..	1	..	..
25	Johns Hopkins University School of Medicine	..	..	..	3	1	1	1	3	2	..	1	3	2	2
26	University of Maryland School of Medicine	..	..	..	2	..	..	2	..	4	2	1	..	..	..
27	Boston University School of Medicine	..	1	..	..	..	1	..	..	..	..	..	..	..	1
28	Harvard Medical School	..	3	..	6	2	5	..	1	2	2	..	8	..	..
29	Tufts College Medical School	..	..	..	..	..	9	..	..	..	..	..	..	..	..
30	University of Michigan Medical School	..	..	..	1	..	..	..	1	1	..	..	4	1	..
31	Wayne University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	University of Minnesota Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..
33	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
34	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35	St. Louis University School of Medicine	1	..	..	9	2	..	..	..	1	..	..	6	8	4
36	Washington University School of Medicine	..	1	2	4	..	..	..	1	2	..	5	..	1	5
37	Creighton University School of Medicine	..	..	..	16	4	..	..	..	..	..	2	..	..	10
38	University of Nebraska College of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	2
39	Dartmouth Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40	Albany Medical College	..	..	..	..	..	3	..	..	..	..	..	2	..	..
41	Long Island College of Medicine	..	..	..	1	..	6	..	..	1	..	..	..	..	..
42	University of Buffalo School of Medicine	2	..	..	..	..	..	..	..	..	..	..	..	..	..
43	Columbia University College of Physicians and Surgeons	2	..	1	6	..	5	..	1	2	2	..	2	2	..
44	Cornell University Medical College	..	..	..	..	1	1	..	1	2	..	..	..	2	..
45	New York Medical College, Flower and Fifth Avenue Hospitals	..	..	..	..	..	8	..	1	1	..	..	1	..	..
46	New York University College of Medicine	..	..	..	..	..	4	..	..	1	..	..	1	..	..
47	University of Rochester School of Medicine and Dentistry	..	1	..	3	1	4	..	..	..	..	..	1	..	..
48	Syracuse University College of Medicine	..	1	..	..	..	4	..	..	1	..	..	1	..	..
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	Duke University School of Medicine	4	1	..	2	..	1	..	..	3	4	..	..	..	..
51	Bowman Gr	1	..	..	..	..	..	..	..	1	..	..	..	..	..
52	University o	..	..	..	..	..	..	..	..	..	..	..	..	..	..
53	University c	..	..	..	3	..	1	..	..	..	..	..	..	4	..
54	Western Re	..	..	..	1	..	1	..	..	..	..	..	1	3	..
55	Ohio State	..	..	..	..	..	..	..	..	..	..	..	..	..	..
56	University c	..	..	..	..	..	..	..	..	..	..	..	..	..	..
57	University c	..	..	..	1	1	..	..	..	..	..	3	..	..	..
58	Hahnemann	4	..	..	5	..	4	..	..	..	..	..	..	1	..
59	Jefferson M	2	..	..	3	2	2	1	..	2	..	..	1	1	..
60	Temple Uni	1	1	..	3	..	3	3	..	10	..	..	1	..	1
61	University c	1	..	..	4	2	3	..	..	..	1	1	1	..	..
62	Woman's M	1	..	..	4	..	2	..	2	1	..	..	3	..	..
63	University c	..	..	..	..	..	..	..	..	..	..	..	..	..	..
64	Medical Col	..	..	..	..	..	..	..	..	..	..	..	..	..	..
65	University c	..	..	..	..	..	..	..	..	..	..	1	..	..	1
66	University of Tennessee College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
67	Meharry Medical College	2	1	..	3	1	..	1	1	..	3	..	7	1	..
68	Vanderbilt University School of Medicine	6	..	..	..	..	..	..	..	..	2	..	1	..	..
69	Southwestern Medical School of the University of Texas	..	3	..	..	..	..	..	..	..	..	..	..	..	..
70	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
71	Baylor University College of Medicine	..	3	..	..	..	..	..	..	..	..	..	..	..	..
72	University of Utah Sch	..	..	..	..	..	..	..	..	..	..	3	..	..	..
73	University of Vermont	..	..	..	..	..	3	..	1	..	..	..	..	..	..
74	University of Virginia	..	1	..	..	..	..	..	1	1	..	..	..	..	..
75	Medical Col	..	..	..	..	..	..	..	..	1	..	..	..	..	..
76	West Virgin	..	..	..	..	..	..	..	..	..	..	..	..	..	..
77	University	..	..	..	..	..	..	..	..	..	..	..	1	..	..
78	Marquette	..	..	..	..	..	..	..	..	..	..	..	1	3	..
79	University	..	..	..	..	..	..	..	..	..	..	..	..	..	..
80	University	..	..	..	1	..	..	..	..	..	..	..	..	..	..
81	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
82	Queen's University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
83	University of Western Ontario Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
84	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
85	McGill University Faculty of Medicine	..	..	1	1	..	4	..	..	..	..	..	..	..	..
86	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
87	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..
88	University of Saskatchewan School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Totals	114	20	102	320	87	94	9	52	72	149	20	377	204	130
		1	2	3	4	5	6	7	8	9	10	11	12	13	14

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* Figures include two freshman classes.

† Figures are for students in beginning premedical year.

in the United States and Canada, 1948-1949

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	
Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
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3	1	..	..	..	1	4	1	1	1	1	4	1	..	2	..	3	1	1	2	2	5	2	..	..	2	2	4	1	..	..	4	..	3	..	..	9	1	97	4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	66	5
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1	1	..	2	2	..	2	2	..	1	..	..	..	..	1	..	17	..	..	1	..	..	2	1	..	..	..	..	..	..	..	2	1	..	..	2	..	..	65	8
..	1	1	1	2	9	1	..	..	..	1	..	..	2	15	..	28	1	..	4	..	..	23	7	..	..	..	..	..	1	..	..	1	..	..	2	..	..	120	9
..	..	..	1	4	..	2	3	..	..	2	1	1	..	6	..	2	..	..	5	..	..	5	..	1	..	..	..	2	..	10	..	3	..	2	2	..	..	92	10
..	..	2	..	..	..	2	..	..	2	..	..	..	..	1	..	18	6	..	1	1	..	5	..	1	..	2	3	..	..	3	1	1	..	..	..	..	6	74	11
..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	2	1	..	..	..	..	..	..	..	1	..	..	73	12
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..	..	..	..	..	..	4	..	..	..	..	..	..	..	1	..	2	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	1	90	15
..	4	1	..	..	..	3	..	..	2	2	..	..	..	..	1	2	..	1	8	1	1	2	..	..	2	..	4	3	..	..	5	3	6	..	..	..	..	128	16
2	1	..	..	..	..	1	..	..	1	1	..	..	..	3	..	6	1	..	1	1	..	1	..	..	1	..	..	..	..	..	..	..	3	..	..	1	..	72	17
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..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	150	19
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82	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	84	21
..	85	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	96	22
..	..	94	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	101	23
..	2	25	..	..	1	..	..	28	..	..	..	..	..	..	1	7	..	..	..	1	..	..	..	..	..	2	15	..	..	2	..	2	..	..	1	1	1	129	24
1	..	..	1	16	..	3	..	2	2	1	..	1	2	2	..	5	2	..	2	..	..	3	2	3	..	..	4	..	..	4	1	1	..	..	..	..	2	79	25
..	..	..	2	55	..	..	..	..	..	..	..	..	1	1	..	..	..	1	3	..	..	6	..	..	..	..	..	2	..	1	3	7	1	..	4	..	..	93	26
1	..	..	2	..	31	..	..	..	..	1	..	..	1	7	..	15	..	..	..	..	1	2	2	..	..	..	..	..	..	..	1	..	..	..	3	..	1	71	27
1	2	..	3	..	15	1	5	..	..	3	2	..	..	6	..	20	..	..	6	1	..	4	1	..	..	1	..	3	1	..	4	2	..	..	2	..	1	113	28
..	..	..	6	..	77	..	..	..	..	..	..	..	6	..	..	1	..	..	..	..	..	1	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	111	29
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..	..	..	..	..	..	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	63	31
..	..	..	..	..	..	..	120	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	125	32
..	..	..	..	..	..	..	..	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56*	33
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1	3	..	1	..	1	5	2	1	28	2	..	..	..	1	..	2	..	..	21	2	..	3	..	..	1	1	3	..	..	..	6	1	..	1	2	1	..	123	35
1	2	..	..	..	2	1	..	..	31	..	1	..	..	1	..	7	..	..	1	2	2	2	1	..	1	..	3	..	..	..	3	1	2	..	1	..	..	86	36
2	..	..	..	..	..	..	..	..	2	2	23	..	..	..	2	1	..	..	..	..	1	..	..	..	2	..	1	..	..	1	4	..	..	1	1	..	..	75	37
..	..	..	..	..	..	..	..	..	..	..	82	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	88	38
..	..	..	..	1	3	..	1	..	1	..	..	..	3	1	..	6	..	..	3	..	..	3	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	24	39
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..	..	..	..	..	1	..	..	..	..	..	..	..	..	4	..	64	..	..	5	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	71	42
..	..	..	2	1	5	..	..	1	..	..	1	..	1	11	..	53	1	..	4	..	..	1	..	..	..	1	2	..	..	1	..	3	..	..	1	..	2	114	43
..	..	..	2	..	4	..	..	..	..	..	..	..	..	13	..	44	..	..	5	1	..	2	1	..	..	1	..	1	..	1	..	..	..	1	1	..	..	84	44
..	..	..	..	..	3	..	..	..	..	..	..	..	1	14	..	87	..	..	4	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	124	45
..	..	..	..	..	3	..	..	..	..	..	..	..	..	20	..	94	..	..	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	128	46
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1	..	..	..	..	1	..	..	..	..	..	..	1	..	4	..	37	..	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	56	48
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..	5	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	2	..	70	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	90	53
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..	..	..	..	1	1	3	..	..	..	..	..	1	..	4	1	7	..	..	3	..	..	11	..	..	..	..	..	1	..	..	1	..	1	..	1	..	1	50	62
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1	..	3	..	2	..	3	..	2	2	..	..	..	..	..	..	11	4	..	4	..	..	1	..	..	..	6	2	..	..	7	..	..	..	..	..	..	..	69	67
..	9	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	2	..	20	4	..	..	..	..	..	..	..	..	..	..	51	68
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	2	..	..	..	..	..	..	54	..	..	..	..	..	..	..	1	..	..	64	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	110	..	..	..	..	..	..	..	..	..	..	110	70
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	88	..	..	..	..	..	..	..	..	..	..	91	71
..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48	..	..	..	..	..	..	..	..	..	52	72
..	..	..	2	..	2	..	..	..	..	..	..	..	..	3	..	5	..	..	..	..	..	1	..	..	..	..	..	..	21	..	..	1	..	..	..	1	..	40	73
..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	3	1	..	..	1	..	1	..	1	..	2	..	..	..	56	..	3	..	..	1	..	..	74	74
..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	71	..	3	..	..	2	..	..	84	75
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	31	76
..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	77	..	..	1	..	80	77
..	..	..	..	..	..	3	5	..	..	1	..	..	..	3	..	3	..	..	4	..	1	7	..	..	1	..	1	..	..	..	..	..	64	..	2	1	..	100	78
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	..	50	79
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	71	..	72	80
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	..	58	81
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	61	..	62†	82
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	60	83
..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	149	..	150†	84
..	..	..	2	..	1	1	..	..	..	..	..	..	2	1	..	5	..	..	2	..	..	1	..	..	..	..	..	..	..	..	3	..	..	..	1	87	4	116	85
..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	120	..	122	86
..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	119	..	124	87
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	32	88
103	124	128	32	90	169	230	144	102	124	25	114	6	21	206	8	786	163	36	344	90	74	512	33	88	38	194	307	67	24	159	52	99	167	7	57	824	46	7,534	
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

The North Carolina legislature during the past year increased the appropriation for the construction of the plant for the projected four year medical school to $8,500,000. This figure does not include an additional $1,000,000 that has been appropriated for a dental clinic building. Construction will begin in the fall of 1949. It appears now that instruction in the third year will be started in the fall of 1952 or 1953.

The Medical School of the University of California in Los Angeles has begun preparation of the site for its buildings, and it is hoped that the school will open in the fall of 1952.

The New Jersey State Medical Society in May 1948 passed a resolution requesting the governor of the state to appoint a survey committee to study the problem of establishing a medical school as a department of the State University at Rutgers. In April 1949 the governor completed the appointment of this committee, which will report to him at the conclusion of its studies.

Missouri and North Dakota are actively studying the possibility of expanding to four year programs, but no definite plans have been developed.

TABLE 15.—*Ratio of Freshman Medical Students*[1] *to State Populations, Academic Year 1948-1949*

Number of students per 100,000 population[2] in the medical and basic science schools of the United States

*New Mexico	1.5	Georgia	4.7
Washington	2.2	Connecticut	4.8
*Wyoming	2.6	Oregon	4.8
*Arizona	3.1	West Virginia	4.8
*Delaware	3.1	Mississippi	4.9
*Florida	3.1	Pennsylvania	4.9
Missouri	3.3	Iowa	5.0
California	3.3	Louisiana	5.0
*Maine	3.6	Minnesota	5.0
Massachusetts	3.6	*Montana	5.1
*Idaho	3.8	Wisconsin	5.1
Michigan	3.8	Arkansas	5.3
New Hampshire	3.9	Indiana	5.3
Oklahoma	3.9	Virginia	5.3
Alabama	4.0	Kansas	5.4
Maryland	4.2	New York	5.5
*Nevada	4.3	District of Columbia	6.0
Texas	4.3	Tennessee	6.3
North Carolina	4.4	South Dakota	6.6
*Rhode Island	4.4	Vermont	6.6
Illinois	4.5	North Dakota	6.7
Kentucky	4.5	Colorado	7.6
*New Jersey	4.5	Nebraska	8.9
Ohio	4.5	Utah	10.5
South Carolina	4.5		

* State with no medical or basic science school.

1. Calculations based on one freshman class for each school.

2. 1948 Census Report, U. S. Department of Commerce.

Vacancies on Instructional Staffs

During and after the war, almost all medical schools experienced difficulty in finding qualified men to fill vacant or newly created positions on their instructional staffs. For this reason information was requested as to the number of full time positions on their teaching staffs for 1949-1950 that the medical schools had been unable to fill up to June 1949.

In the United States twelve schools reported that they had no unfilled positions, thirty-nine schools had unfilled positions in both preclinical and clinical departments, twenty schools had unfilled positions in the preclinical departments only and six in the clinical departments only. One school was unable to provide information. The total number of unfilled full time positions was 441, 240 in the preclinical departments and 201 in the clinical departments.

During the year 1948-1949 figures from seventy-seven of the schools in the United States revealed that they employed 2,462 instructors in the preclinical departments on a full time basis. The number of

TABLE 16.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1948-1949*

	Home State	Other State	Terr. & Poss.	Canadian	Foreign	Totals
Medical College of Alabama	52	0	0	0	0	52
University of Arkansas	92	0	0	0	0	92
University of California	71	0	0	0	1	72
College of Medical Evangelists	17	70	0	9	1	97
University of Southern California	63	3	0	0	0	66
Stanford University	53	8	1	0	1	63
University of Colorado	64	0	0	0	0	64
Yale University (Connecticut)	11	52	2	0	0	65
Georgetown University (D. C.)	4	114	2	0	0	120
George Washington University	24	66	2	0	0	92
Howard University	7	61	0	0	6	74
Emory University (Georgia)	49	23	1	0	0	73
University of Georgia	80	0	0	0	0	80
Chicago Medical School (Illinois)	13	59	0	0	0	72
Northwestern University	53	75	0	0	0	128
Stritch School of Medicine	57	31	1	0	1	90
University of Chicago	33	38	0	1	0	72
University of Illinois	161	5	0	0	0	166
Indiana University	144	4	0	0	2	150
State University of Iowa	91	1	0	0	0	92
University of Kansas	82	2	0	0	0	84
University of Louisville (Kentucky)	85	9	2	0	0	96
Louisiana State University	94	7	0	0	0	101
Tulane University of Louisiana	25	101	1	1	1	129
Johns Hopkins University (Maryland)	16	61	0	0	2	79
University of Maryland	55	39	4	0	0	98
Boston University (Massachusetts)	31	36	3	0	1	71
Harvard Medical School	15	95	2	0	1	113
Tufts College Medical School	77	34	0	0	0	111
University of Michigan	111	34	1	0	1	147
Wayne University	68	0	0	0	0	68
University of Minnesota	120	5	0	0	0	125
University of Mississippi	56	0	0	0	0	56*
University of Missouri	47	0	0	0	0	47
St. Louis University	28	92	2	1	0	123
Washington University	31	54	1	0	0	86
Creighton University (Nebraska)	23	51	1	0	0	75
University of Nebraska	82	6	0	0	0	88
Dartmouth Med. School (New Hampshire)	3	21	0	0	0	24
Albany Medical College (New York)	35	12	1	0	2	50
Long Island College of Medicine	80	26	2	0	5	113
University of Buffalo	54	16	1	0	0	71
Columbia University	53	58	1	0	2	114
Cornell University	44	39	1	0	0	84
New York Medical College	87	37	0	0	0	124
New York University	94	33	0	0	1	128
University of Rochester	36	29	1	1	1	68
Syracuse University	37	18	0	0	1	56
University of North Carolina	60	0	0	0	0	60
Duke University	25	49	0	0	2	76
Bowman Gray School of Medicine	45	10	0	0	0	55
University of North Dakota	28	2	0	0	0	30
University of Cincinnati (Ohio)	70	20	0	0	0	90
Western Reserve University	51	25	1	0	3	80
Ohio State University	88	0	0	0	0	88
University of Oklahoma	64	0	0	0	0	64
University of Oregon	57	17	1	1	0	76
Hahnemann Med. College (Pennsylvania)	62	41	1	0	1	105
Jefferson Medical College	97	63	5	0	1	166
Temple University	74	56	6	0	1	137
University of Pennsylvania	73	50	0	0	3	126
Woman's Medical College	11	37	1	0	1	50
University of Pittsburgh	86	0	0	0	0	86
Medical College of South Carolina	60	0	0	0	0	60
University of South Dakota	24	6	1	0	0	31
University of Tennessee	152	1	0	0	0	153
Meharry Medical College	6	63	0	0	0	69
Vanderbilt University	20	31	0	0	0	51
Southwestern Medical School (Texas)	54	9	1	0	0	64
Baylor University	88	3	0	0	0	91
University of Texas	110	0	0	0	0	110
University of Utah	48	4	0	0	0	52
University of Vermont	21	18	0	1	0	40
University of Virginia	56	17	1	0	0	74
Medical College of Virginia	71	11	2	0	0	84
West Virginia University	31	0	0	0	0	31
University of Wisconsin	77	2	0	1	0	80
Marquette University	64	33	2	1	0	100
University of Alberta (Canada)	0	0	0	50	0	50
University of Manitoba	0	1	0	71	0	72
Dalhousie University	0	0	0	58	0	58
Queen's University	0	1	0	61	0	62**
University of Western Ontario	0	0	0	60	0	60
University of Toronto	0	1	0	149	0	150**
McGill University	0	24	1	87	4	116
University of Montreal	0	2	0	120	0	122
Laval University	0	4	1	119	0	124
University of Saskatchewan	0	0	0	32	0	32
Totals	4,481	2,126	57	824	46	7,534

* Figures include two freshman classes.

** Figures for students in beginning premedical year.

unfilled positions thus represents approximately 10 per cent of the total positions in the preclinical departments of the schools in the United States.

Comparable figures for the total number of full time positions in the clinical departments are not available since some schools in reporting included residents and others did not. From the figures submitted, however, it may be estimated that the number of full time positions in the clinical departments of the medical schools, excluding residents, is approximately 2,200, so that the vacancies in this area are in the neighborhood of 9 per cent.

In Canada three schools reported no unfilled positions, five schools reported vacancies on the staffs of their preclinical departments and two schools vacancies in both preclinical and clinical departments. The total number of unfilled positions was 36, 25 in the preclinical departments, and 11 in the clinical departments.

A shortage of trained personnel as a result of the war and the relatively low salary scale prevailing in a number of medical schools are undoubtedly both responsible for the inability of the schools to fill these vacant positions. From the information available it is not possible to determine which of these factors is the more important.

Instruction in Clinical Effects of Nuclear Energy

Four years have elapsed since it became known that the ability to release nuclear energy on a catastrophic scale created new and important problems for the medical profession and that radioactive substances could be prepared in relatively large quantities for biologic investigations. It is of interest, therefore, to determine the extent to which the medical schools are including in the undergraduate curriculum instruction in the clinical effects of nuclear energy.

Forty-nine medical schools and two schools of the basic sciences in the United States report that they offer such instruction. In the majority of the schools instruction in this subject is included in established courses, such as radiology, medicine, biochemistry, physiology and pharmacology. Ten schools, Colorado, Northwestern, Iowa, Johns Hopkins, Duke, Hahnemann, Meharry, Vanderbilt, Southwestern and the Chicago Medical School, report that they give separate courses in the subject ranging from 4 to 36 hours in length and averaging 16 hours.

Plans of Medical Students for Future Practice

In last year's Educational Number it was reported that a poll of eighteen classes conducted by fifteen medical schools during the year 1947-1948 revealed that there was basis for questioning the concern that has been expressed in some quarters that few present day medical students are planning to enter general practice. The over-all averages for the eighteen classes reported showed that 36 per cent of the students planned to enter general practice, 36 per cent to specialize and 28 per cent were undecided.

During the year 1948-1949 eighteen medical schools polled forty-three of their classes to determine the students' plans with respect to practice.

Polls of fifteen senior classes were conducted. In eight classes of the students who had made a tentative decision, the majority planned to specialize. In the other seven the majority planned to enter general practice. The average for the fifteen classes were: 44.7 per cent intended to specialize; 38.4 per cent intended to enter general practice, and 16.9 per cent were undecided.

Eleven junior classes were polled. In nine classes the majority of students planned to enter general practice. In the other two schools the vote was in favor of specialization, although in both schools almost half the class was undecided. The averages for the eleven classes were: 47 per cent planned to do general practice; 26.6 per cent planned to specialize and 26.4 per cent were undecided.

Polls of seventeen freshman and sophomore classes revealed that in thirteen classes the majority of those having a definite preference planned to enter general practice while in four the majority intended to specialize. The average for the seventeen classes were: 44.9 per cent planned to enter general practice; 18.5 per cent planned to specialize, and 36.6 per cent were undecided.

In summary of the forty-three classes polled, in twenty-eight classes the majority of students who had reached a decision planned to enter general practice, while in fourteen classes the majority planned to specialize.

TABLE 17.—*Medical Schools Requiring an Internship**

UNITED STATES

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine †

CANADA

University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

* Certain schools will accept a year of laboratory work in lieu of the internship.
† Degree not withheld until internship completed.

TABLE 18.—*Medical Licensing Boards Requiring a One Year Internship**

Alabama
Alaska
Arizona
Canal Zone†
Delaware†
District of Columbia
Hawaii†
Idaho†
Illinois†
Iowa†
Michigan†
Montana
Nevada
New Hampshire
New Jersey†
New Mexico
North Dakota†
Oklahoma
Oregon
Pennsylvania†
Puerto Rico‡
Rhode Island†
South Dakota
Utah†
Vermont†
Virgin Island
Washington†
West Virginia
Wisconsin
Wyoming

* Some states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.
† Internship must be a rotating service.
‡ Two year rotating internship required.

The over-all averages for the forty-three classes included in the study were: 43.1 per cent planned to enter general practice; 29.7 per cent planned to specialize, and 27.2 per cent were undecided.

Forty-two schools reported programs to stimulate the interest of the students in careers in general practice. The programs included special lectures on general practice in nineteen schools, preceptorships with general practitioners in nine, counseling service in seven, scholarships in six and clerkships in rural hospitals or in a general practice outpatient department in four schools. One school has its students make a survey of rural areas in the state to determine the needs and opportunities for physicians.

Ten schools reported that they were sponsoring internships or residency programs specifically designed for prospective general practitioners.

Financial Support of Medical Schools

The budgets of the medical and basic science schools in the United States for the academic year 1949-1950 total approximately $61,000,000. This sum represents an increase of $10,000,000 over the figures reported for the previous year.

The figure $61,000,000 does not include grants for research or special teaching projects from outside agencies or any significant portion of the cost of operating the teaching hospitals of the country. It does include a total of approximately $2,900,000 that the medical schools will spend to support certain activities in their affiliated hospitals. As in the previous year this sum is largely made up of salaries of professional and technical personnel on hospital staffs, the cost of operating special laboratories and in a few instances contributions to the operating budgets of hospitals and dispensaries used by the medical school for teaching purposes.

The figure $61,000,000 does not include certain major expenditures, chiefly of a nonrecurring nature, which the schools estimate will total approximately $5,800,000. This sum will be spent largely for construction and renovations and the purchase of special equipment.

As in previous years, the total of $61,000,000 that it will cost to operate the medical schools during the coming year does not include the direct and frequently substantial contributions that a number of teaching hospitals make to the educational programs of their affiliated schools, nor does it include the value of the services contributed by unpaid members of the teaching staffs who in many schools are responsible for a major part of the instruction, especially in the clinical departments.

This year all but five schools supplied figures which included the cost of maintenance of the physical plant and all but three the cost of operating the library. Last year fourteen schools did not report the cost of plant maintenance, and four did not include the budgets of their libraries.

Two schools, one less than last year, included a charge for general university administration in their

TABLE 19.—*Other Students Enrolled in Medical Schools, 1948-1949*

School	Part Time or Special Medical Students Working Toward M.D. Degree	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Totals
Medical College of Alabama	2	2	3	18	0	11	36
University of Arkansas	3	0	7	28	0	0	38
College of Medical Evangelists (Calif.)	3	0	0	0	84	48	135
Stanford University	1	0	0	0	189	0	190
University of California	0	0	0	9	706	52	767
University of Southern California	0	18	143	0	367	37	565
University of Colorado	8	151	46	29	0	4	238
Yale University (Connecticut)	0	0	87	5	329	80	501
George Washington University (D. C.)	0	0	68	0	350	0	418
Georgetown University	0	1	3	4	25	0	33
Howard University	0	0	0	0	0	0	0
Emory University (Georgia)	1	0	0	28	4	0	33
University of Georgia	9	0	0	4	134	0	147
Chicago Medical School (Ill.)	0	0	0	0	0	0	0
Northwestern University	4	64	60	1	18	94	241
Stritch School of Medicine	1	3	16	0	1	14	35
University of Chicago	0	10	200	0	0	4	214
University of Illinois	1	40	71	1	96	23	232
Indiana University	0	11	10	12	190	39	262
State University of Iowa	0	15	53	0	257	95	420
University of Kansas	1	5	17	5	657	20	705
University of Louisville (Ky.)	2	0	0	5	490	2	499
Louisiana State University	1	0	0	0	32	76	109
Tulane University	3	24	0	0	221	45	293
Johns Hopkins Univ. (Md.)	0	0	0	1	98	0	99
University of Maryland	0	2	18	1	20	3	44
Boston University (Mass.)	0	0	30	0	0	0	30
Harvard Medical School	0	0	45	0	436	103	584
Tufts College Medical School	0	0	0	0	272	0	272
University of Michigan	2	0	0	1,647	1,173	253	3,075
[illegible]	4	118	22	0	271	0	415
[illegible]	0	393	213	0	1,021	47	1,674
[illegible]	3	0	6	5	0	2	16
[illegible]	3	52	17	46	0	2	120
[illegible]	0	0	37	16	0	0	53
[illegible]	0	0	38	0	174	97	309
[illegible]	6	0	1	7	0	0	14
University of Nebraska	0	8	5	2	25	0	40
Dartmouth Medical School (New Hampshire)	0	0	1	1	0	0	2
Albany Med. College (N. Y.)	5	0	0	0	0	0	5
Columbia University	0	16	0	0	1,149	114	1,279
Cornell University	0	2	13	0	148	30	193
Long Island Coll. of Medicine	0	30	0	0	748	19	797
New York Medical College	0	38	0	0	277	38	353
New York University	0	0	65	13	1,877	0	1,955
Syracuse University	0	0	3	0	184	0	187
University of Buffalo	0	0	9	0	80	4	93
University of Rochester	0	0	0	0	0	0	0
Duke University (North Carolina)	0	0	10	0	104	5	119
University of North Carolina	1	0	41	22	352	0	416
Bowman Gray School of Medicine	1	0	7	0	0	0	8
University of North Dakota	1	0	1	0	0	0	2
Ohio State University	0	9	53	0	0	0	62
University of Cincinnati	1	19	25	16	196	0	257
Western Reserve University	1	2	58	0	146	66	273
University of Oklahoma	0	1	10	0	428	19	458
University of Oregon	0	6	12	3	738	0	759
Hahnemann Medical College (Pennsylvania)	0	0	2	0	0	0	2
Jefferson Medical College	0	0	0	0	0	0	0
Temple University	2	66	0	0	102	22	192
University of Pennsylvania	0	0	131	1	45	0	177
University of Pittsburgh	5	0	0	0	0	0	5
Woman's Medical College	0	0	0	1	0	0	1
Medical College of South Carolina	0	0	0	2	203	12	217
University of South Dakota	4	0	0	1	0	1	6
Meharry Medical College (Tennessee)	4	0	4	14	11	0	33
University of Tennessee	0	16	22	0	0	0	38
Vanderbilt University	0	0	4	0	0	0	4
Baylor University (Texas)	0	0	0	0	200	15	215
Southwestern Medical School	0	0	0	7	8	10	25
University of Texas	0	0	7	0	857	0	864
University of Utah	3	1	17	44	120	0	185
University of Vermont	1	0	0	12	0	6	19
Medical College of Virginia	0	0	15	3	82	75	175
University of Virginia	0	9	0	0	0	58	67
West Virginia University	2	0	0	0	0	0	2
Marquette University (Wis.)	4	1	2	8	0	52	67
University of Wisconsin	0	0	37	17	0	0	54
Totals	93	1,133	1,765	2,039	15,695	1,697	22,422
CANADA							
Dalhousie University	0	0	0	0	0	0	0
Laval University (Quebec)	0	3	3	0	0	0	6
McGill University (Montreal)	0	0	0	2	203	0	205
Queen's University (Kingston)	0	21	0	33	98	0	152
University of Alberta (Edmonton)	0	0	7	0	237	4	248
University of Manitoba (Winnipeg)	0	5	3	1	51	0	60
University of Montreal	0	6	0	0	0	0	6
University of Saskatchewan (Saskatoon)	0	0	2	0	0	0	2
University of Toronto	0	36	9	0	102	71	218
University of Western Ontario	2	35	19	0	0	35	91
Totals	2	106	43	36	691	110	988

budgets. The other schools in which such a charge is made were able to subtract this item so that their figures could be compared with those from the schools not having such a charge.

The net result of including the cost of plant maintenance for nine additional schools and the cost of the library for one additional school and of deducting the charge for general university administration for one school was an increase in the total budgets of the medical schools of $600,000 over the figure reported for the previous year.

It is appreciated that changes in the procedures followed by the medical schools in reporting their budgets and changes in the number of approved medical schools make exact comparisons of the budgets for one year with those of another year impossible without a detailed audit. A reasonably accurate correction can be made for these differences, however, which will permit an estimate of the order of magnitude of the increases that have occurred in the medical school budgets during the past three years. It can thus be calculated that the total of the budgets for the year 1949-1950 represents a real increase of approximately 19 per cent over the total for 1948-1949 and of approximately 34 per cent over the total for 1947-1948.

It is of some interest to compare in a general way the figure $61,000,000 reported by the medical schools as the total of their budgets for the coming year with total budgets of the prewar years. The only figures presently available for this comparison are those furnished by the medical schools at the time of the survey conducted by the Council in 1934-1936. The budgets for the sixty-six medical schools and ten schools of the basic medical sciences then in operation totaled only $23,500,000.

The range of expenditures per student by the medical schools will vary in 1949-1950 from $917 to $9,500. For the country as a whole the average expenditure per student will be $2,577 and the median $2,364. In table 20 the seventy-eight medical and basic science schools in the United States have been arranged in eight groups according to their anticipated expenditures per student. A comparison of these figures with those for 1948-1949 reveals that for the coming academic year the number of schools spending less than $1,500 per student has decreased from sixteen to ten, the number spending $2,000 or more per student has increased from thirty-nine to fifty-two, and the number spending $3,000 or more has increased from twelve to twenty-seven.

Receipts from tuition fees during the coming year will total $13,900,000, or 22.8 per cent of the budgets of the medical schools. Last year tuition fees provided $12,800,000, or 25 per cent of the budgets, while in 1947-1948 tuition fees amounted to $12,000,000, or 28 per cent of the budgets of the schools. The number of schools unable to match student fees dollar for dollar with funds from nonstudent sources remains at seven, the same number as in 1948-1949.

The schools have estimated that during the academic year 1949-1950 they will receive from outside agencies a total of $21,000,000 in grants for research and $4,000,000 in grants for special teaching activities. Last year funds received in these categories totaled $21,100,000 and $2,700,000, respectively.

No attempt was made to secure complete budgetary information for the teaching hospitals used by the medical schools. Sixteen schools did report the budgets for their teaching hospitals. The total of these budgets was $29,000,000. Patient charges will be used in part to meet these expenses, but the greatest part of the budgets will be provided by direct appropriation from state or university funds.

Despite the increased funds that the medical schools will receive during the coming academic year, only eight schools have reported that they do not stand in need of additional operating funds to meet their essential needs. The majority of schools have specified sums in the range of $100,000 to $400,000 annually as the amount of additional support that they require. A few schools expressed a need for larger sums.

Thirty-four of the schools reported that the prospect of receiving adequate financial support from local sources is more favorable at present than a year ago. Twenty-eight stated the belief that the situation is unchanged and fourteen that the prospects are less favorable. Two schools did not offer an opinion.

Several bills have been introduced into the present Congress to provide federal support for the medical schools. One bill, S. 1453, has been reported favorably by the Senate Committee on Labor and Public Welfare, but no action had been taken by the Senate at the time this report was prepared.

During the past year several groups interested in medical education have joined in actively exploring the possibility of establishing an organization to secure funds on a national scale from voluntary sources for the support of the medical schools. The initial response by leaders in many fields to the establishment of such an organization has been favorable. It is not unlikely, therefore, that the formation of such an organization may be announced before the end of the present year.

Table 20.—*Expenditures per Student by the Medical and Basic Science Schools in the United States, 1949-1950, Excluding Research Funds from Outside Sources*

	Number of Schools
$ 917 to 999	1
1,000 to 1,499	9
1,500 to 1,999	16
2,000 to 2,499	15
2,500 to 2,999	10
3,000 to 3,999	18
4,000 to 4,999	4
Over 5,000	5
Total	78

During the past three years there has been grave concern that the financial problems of the medical schools would lead to a rapid deterioration in the quality of medical education in this country. At the end of the war most schools were unable to see new sources of financial support to meet rapidly rising costs and to replace funds lost through lowered returns on endowments and the decrease in individual gifts as the result of high taxes. It is still too early to conclude that the crisis has been passed. On the other hand, the favorable developments of the past year should allay some of the worst fears that have been prevalent. The budgets of most schools have been increased materially, and it would appear that the threat of an immediate halt to progress and a consequent decline in standards is being met.

Several schools are still faced with serious financial problems, some of long standing and others of more recent origin. Almost all schools are still concerned about the uncertainty of the future. The definite increase in local support that has already materialized and the real interest in the financial problems of the medical schools that has been awakened during the past year in high quarters, both private and governmental, should be construed as promising evidence that the schools will not be without necessary funds in the years ahead.

Fees

The average tuition fee for an academic year charged by the medical schools in the United States increased 36 per cent from the year 1939-1940 through the academic year which has just ended. It was pointed out in last year's Educational Number that this increase amounted to less than half of the general increase in the cost of living that occurred during the same period. It is not surprising, therefore, that twenty-four medical schools have found it necessary to announce increases in tuition charges for the coming year. These increases will raise the average tuition fee from $513 for 1948-1949 to $548 for 1949-1950. The average tuition fee now stands at 148 per cent of the average tuition fee in 1939-1940. Despite this increase, tuition fees, as pointed out in the preceding section, will provide only 22.8 per cent of the cost of operating the medical schools during the forthcoming year.

In table 21 the eighty-eight medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to tuition fees charged resident students for the sessions 1948-1949 and 1949-1950. The median fee of medical schools in the United States for resident students for 1949-1950 will be $577. The figures in table 21 represent one fourth of the total tuition fee charged for the four years of the medical school course, including minor charges such as those for matriculation, breakage, diploma and graduation. Thirty-two schools in the United States make an additional charge for nonresidents ranging from $78 to $400.

Table 21.—*Fees in Medical and Basic Science Schools in the United States and Canada*

	1948-1949 Number of Schools	1949-1950 Number of Schools
$100 to 199	4	3
200 to 299	10	9
300 to 399	16	14
400 to 499	11	11
500 to 599	9	11
600 to 699	26	16
700 to 799	9	16
800 to 830	3	8
Total	88	88

Private and Governmental Medical Schools

In the course of the various discussions that have taken place in recent years concerning possible sources of increased financial support for medical education, many requests have been made for statistical data with respect to various activities of the privately owned medical schools, on the one hand, and those schools owned by governmental units, on the other.

For this reason a summary of certain pertinent data for the schools in the United States, classified as to the nature of their ownership, are presented in this section. It should be pointed out that, while the medical schools can be readily classified as to whether they are owned by a unit of government or by a private corporation, when the source of their operating funds is considered the distinction is not so sharp. Thus several governmental schools possess endowments of their own and receive funds from other private sources. On the other hand, certain privately owned schools, notably the schools in Pennsylvania, receive substantial financial aid from state tax funds. One privately owned school receives major financial assistance from the federal government. In recent years, practically all medical schools have received grants from one or another federal agency. These grants, however, are usually for specific projects and except for the school previously referred to do not constitute direct aid to the medical schools in financing their basic programs.

Table 22.—*Medical Schools Classified by Ownership, 1948-1949*

Privately Owned

College of Medical Evangelists (Calif.)
Stanford University School of Medicine
University of Southern California School of Medicine
Yale University School of Medicine (Conn.)
[illegible] sity School of Medicine (D. C.)
[illegible] *ool of Medicine*
[illegible] of Medicine
Emory University School of Medicine (Ga.)
Chicago Medical School (Ill.)
Stritch School of Medicine of Loyola University
Northwestern University Medical School
University of Chicago, The School of Medicine
Tulane University of Louisiana School of Medicine (La.)
Johns Hopkins University School of Medicine (Md.)
Boston University School of Medicine (Mass.)
Harvard Medical School
Tufts College Medical School
St. Louis University School of Medicine (Mo.)
Washington University School of Medicine
Creighton University School of Medicine (Nebr.)
Dartmouth Medical School (N. H.)
Albany Medical College (N. Y.)
Columbia University College of Physicians and Surgeons
Cornell University Medical College
Long Island College of Medicine
New York Medical College, Flower and Fifth Avenue Hospitals
New York University College of Medicine
Syracuse University College of Medicine
University of Buffalo School of Medicine
University of Rochester School of Medicine and Dentistry
Duke University School of Medicine (N. C.)
Bowman Gray School of Medicine of Wake Forest College
Western Reserve University School of Medicine (Ohio)
Hahnemann Medical College and Hospital of Philadelphia (Pa.)
Jefferson Medical College of Philadelphia
Temple University School of Medicine
University of Pennsylvania School of Medicine
[illegible] School of Medicine
[illegible] Pennsylvania
[illegible] n.)
[illegible] of Medicine
[illegible] Medicine (Texas)
[illegible] of the Southwestern Medical Foundation
Marquette University School of Medicine (Wis.)

State Owned

Medical College of Alabama
University of Arkansas School of Medicine
University of California Medical School
University of Colorado School of Medicine
University of Georgia School of Medicine
University of Illinois College of Medicine
Indiana University School of Medicine
State University of Iowa College of Medicine
University of Kansas School of Medicine
Louisiana State University School of Medicine
University of Maryland School of Medicine
University of Michigan Medical School
University of Minnesota Medical School
University of Mississippi School of Medicine
University of Missouri School of Medicine
University of Nebraska College of Medicine
University of North Carolina School of Medicine
University of North Dakota School of Medicine
Ohio State University College of Medicine
University of Oklahoma School of Medicine
University of Oregon Medical School
Medical College of the State of South Carolina
University of South Dakota School of Medical Sciences
University of Tennessee College of Medicine
University of Texas School of Medicine
University of Utah School of Medicine
University of Vermont College of Medicine
Medical College of Virginia
University of Virginia Department of Medicine
West Virginia University School of Medicine
University of Wisconsin Medical School

Municipally Owned

University of Louisville School of Medicine
Wayne University College of Medicine
University of Cincinnati College of Medicine

During the academic year 1948-1949 forty-four schools were owned by private corporations which in all cases were nonprofit organizations, exempt from federal income taxation; thirty-one schools were owned by states and three by municipal governments. In table 22 the schools are listed according to the nature of their ownership.

During the coming academic year three schools, Syracuse, Long Island and Southwestern, will pass from private to state ownership. For the purpose of compiling the statistics in this section, however, these schools are classified as private schools in accordance with their status during the period covered.

Of the forty-four private schools thirty-five are *integral departments of a university while nine are* independent institutions without university affiliations. The schools in the latter group are: College of Medical Evangelists, Chicago Medical School, Long Island College of Medicine, New York Medical College, Hahnemann Medical College, Jefferson Medical College, Woman's Medical College, Meharry Medical College and Southwestern Medical College.

Of the thirty-four governmental schools two are independent institutions, the Medical College of the State of South Carolina and the Medical College of Virginia.

Enrolments in the private schools during 1948-1949 numbered 14,126, or 59.7 per cent of the total for the country. The enrolments in the governmental schools was 9,544, or 40.3 per cent.

The freshman classes in the private schools totaled 3,887 and in the governmental schools 2,801, or 58.1 per cent and 41.9 per cent, respectively. The private schools graduated 3,191 physicians, 61.8 per cent of the total for the year, and the government schools 1,969, or 38.2 per cent.

Statistics with respect to the enrolment of resident and nonresident students by the governmental and private schools have already been presented in the section on the geographic source of freshman students.

The budgets for the governmental schools in 1948-1949 totaled approximately $19,519,000 and for the private schools approximately $31,860,000.

The range of resident tuition fees in the governmental schools for 1948-1949 was $115 to $567, with an average of $349 and a median of $375. For the private schools tuition fees ranged from $351 to $831. The median and the average were both $650.

Selective Service Act

In last year's Educational Number reference was made to the fact that the National Headquarters of the Selective Service System after consultation with representatives of the medical schools was preparing to announce a plan which would make it possible for a certain number of students in premedical and medical courses to be given consideration for a deferred classification.

This plan was published in November 1948 as Local Board Memorandum No. 7 issued by the National *Headquarters of the Selective Service System.* The principal feature of this plan provides for the issuance by the medical schools of certificates identifying registrants with the Selective Service System who are attending medical schools as bona fide medical students. The plan also permits the medical schools to issue certificates for a limited number of premedical students whom the medical schools have provisionally selected for admission.

Before this plan had been in operation for more than a few months, it was announced by the National Military Establishment in the early part of 1949 that inductions under the 1948 Selective Service Act were being postponed indefinitely. As a consequence medical schools were advised that there was no need at present for them to undertake the added work of selecting and certifying premedical students for provisional acceptance. The schools were advised, however, to continue to submit certificates on Selective Service Form 103 for medical students and premedical students whom they had definitely accepted for admission and who are registered with Selective Service. This advice was based on the fact that the local boards are continuing to classify registrants. If a situation should arise requiring inductions, medical students for whom certificates have not been issued and who are classified as available for induction might have difficulty in having their classification corrected before they are ordered to active duty. The National Headquarters of the Selective Service System therefore advises that medical schools continue until further notice to fill out and file with the National Headquarters Form 103 for the aforementioned students.

It is understood that, at the time inductions were suspended, the National Headquarters of the Selective Service System was giving favorable consideration to a broader plan of deferments that would have included preprofessional and professional students in many fields of learning. This newer plan will probably not be promulgated unless inductions are resumed.

POSTGRADUATE AND CONTINUATION COURSES FOR PHYSICIANS

The Council on Medical Education and Hospitals publishes semiannually in The Journal lists of postgraduate and continuation courses for physicians. The opportunities presented in these listings include a wide variety of fields in clinical medicine and the basic sciences. These courses vary in length from a few days to a year or longer. Some are concentrated full time courses; others are part time. In the June 25, 1949, issue of The Journal more than 800 courses covering the period from July 1, 1949, to Jan. 15, 1950, are listed. The medical schools take a prominent part in presenting this type of training. In addition, other agencies offering courses employ the facilities of the medical schools. State and county medical societies, hospitals, state and city boards of health and special societies are also active in providing leadership in developing this aspect of medical education.

With the exception of the formal basic science courses, these postgraduate and continuation courses are not designed to prepare physicians for specialty board certification. Some opportunities are offered for review work in preparation for examination in the specialties.

This section is devoted to an analysis of the courses offered during the period, July 1, 1948 to June 30, 1949. Mention is also made of some of the recent developments in postgraduate education. The statistical summaries are divided into three groups: short review courses of five days or less, courses of more than five days' duration and, lastly, a group including clinical conferences, graduate assemblies, study courses and courses of a chautauqua nature. Figures are also given for three previous years to show the continued popularity of this type of education.

Recent Developments

The Committee on Postgraduate Instruction of the California Medical Association has developed a series of postgraduate courses throughout the state under the direction of a part time medical director given by faculty members of the medical schools in California. The program provides for two to three day sessions in cities in the center of a territory of seven or eight counties.

The University of Colorado Medical Center is offering postgraduate training for general practitioners through its Division of Graduate Medical Education. A five day course is offered, each day being devoted to a definite medical subspecialty. The sessions include formal lectures, case presentations and panel discussions.

Yale University School of Medicine, through its Committee on Postgraduate Instruction, has instituted a number of nonresident courses of instruction, on both a part time and full time basis. In cooperation with the Connecticut State Medical Society, a questionnaire was mailed to all physicians in the state in an effort to determine what type of courses would have the widest appeal.

The University of Florida Graduate School, in cooperation with the Florida Medical Association and the State Board of Health, offers seminars on special topics every month.

A postgraduate psychiatric institute given under the auspices of the Maryland Association of Private Practicing Physicians and the Division of Mental Hygiene of the State Department of Health was planned for all practicing physicians of the state except psychiatrists. The content of the program was directed toward helping the practicing physician to expand his psychiatric knowledge. It included didactic lectures, case presentations and discussions in which the students participated. The facilities of the University of Maryland School of Medicine were made available to the institute.

The Massachusetts Medical Society sponsors a graduate program for all physicians of the state. On the basis of geography and population centers, the state is divided into ten districts or teaching centers. Each district, with the exception of the Greater Boston District, has three or four programs a year. These programs are comprehensive in nature and are presented by a team of instructors. Programs generally utilize an afternoon and evening in a given center. In the Greater Boston District a six week program is presented covering a wide range of subjects. All instruction is provided free of charge.

A new program in the Wayne University Graduate School, Detroit, is one offering advanced work leading to the degree, Master of Science in Ophthalmology. The course is for physicians who wish to specialize in ophthalmology and is offered through the facilities of the College of Medicine.

The New York Post-Graduate Medical School has been merged into the New York University-Bellevue Medical Center. Following this merger the formation of a new postgraduate school was announced to be known as the Post-Graduate Medical School of the New York University-Bellevue Medical Center. The New York Post-Graduate Medical School was incorporated in 1882 and was the first postgraduate medical institute in the United States. The annual registration of the school has been in excess of 1,000 physicians and specialists. Postgraduate courses have been offered by New York University College of Medicine since 1920, and a postgraduate medical division was established in 1945. Negotiations between the two schools began December 1946.

The Special Training Division of the Oak Ridge Institute of Nuclear Studies will offer three basic courses in the technics of using radioisotopes as tracers. Each course will cover four weeks. Each session is divided into laboratory work, lectures on laboratory experiments, general background lectures and special topic seminars.

TABLE 23.—*Postgraduate Courses Offered and Attendance*

	1945-1946			1946-1947			1947-1948			1948-1949		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
Short review courses (5 days or less)........	154	128	4,140	239	205	16,274	496	478	31,569	304	262	16,621
Courses of less than a year and more than 5 days..............	1,070	1,043	19,991	1,291	1,137	23,062	1,279	1,183	24,878	1,074	984	28,507
Clinical conferences, graduate assemblies, study and chautauqua courses	52	52	21,824	21	21	20,475	25	25	26,356	67	67	38,058
Totals	1,276	1,223	45,955	1,551	1,363	59,811	1,800	1,686	82,803	1,445	.1,313	83,386

Analysis of Courses Offered in 1948-1949

Short Review Courses.—Thirty-one states and the District of Columbia provided courses of five days' duration or less. These states offered 304 courses as follows:

Alabama	1	Minnesota	15
California	17	Missouri	2
Colorado	4	Nebraska	2
Connecticut	14	New Jersey	2
District of Columbia	19	New York	74
Florida	4	North Carolina	2
Georgia	3	Ohio	2
Illinois	18	Oklahoma	5
Indiana	4	Oregon	2
Iowa	3	Pennsylvania	12
Kansas	17	Tennessee	2
Kentucky	1	Texas	7
Louisiana	5	Utah	4
Maryland	1	Virginia	1
Massachusetts	25	Washington	1
Michigan	25	Wisconsin	10
			304

The subjects of these courses of less than five days' duration included:

Anesthesiology
Bacteriology
Cardiovascular disease
Chest diseases
Dermatology and syphilology
Diabetes
Electrocardiography
Gastroenterology
Hematology
Industrial health
Internal medicine
Legal medicine
Malignant diseases
Obstetrics and gynecology
Ophthalmology
Orthopedic surgery
Otolaryngology
Pathology
Pediatrics
Pharmacology
Physical medicine
Physiological chemistry
Physiology
Poliomyelitis
Proctology
Public health
Radiology
Surgery
Therapy
Urology
Venereal diseases

The programs varied in length from sessions of one hour or a series of five or more lectures to four days' full time and consisted of organized courses, clinics utilizing hospital patients, lectures and demonstrations. Of the 304 courses reported, 81 covered five days full time, 38 were four day courses, 42 were three day courses, 34 two days and 42 one full day. The remainder of the courses were reported by lectures, sessions or hours. The type of instruction was didactic, clinical or both. The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of state. Medical school faculties participated in 108 courses. The facilities used for conducting these courses included hospitals, clinics, medical schools and hotels.

These offerings were held every month, the majority being given in January, February, March, April and October, while in 27 instances they were arranged at the convenience of the applicant. Six were available for specialists only. Thirty-six were offered continuously throughout the year. Fees ranged from $2 to $375. The majority were less than $50. In 27 instances no fee was charged.

Sponsoring agencies included 23 medical schools, 4 county and 13 state medical societies, 6 state boards of health and 28 other agencies including hospitals and special societies.

The attendance reported for 262 courses was 16,821. For 42 courses no attendance was reported.

Twenty-seven scheduled courses were cancelled.

Courses of More than Five Days.—In centers where ample clinical facilities are available, 1,074 graduate courses of more than five days' duration were offered in thirty-three states and the District of Columbia during 1948-1949. These states and the number of courses which were given in each state are as follows:

Arkansas	2	Minnesota	14
California	66	Mississippi	2
Colorado	5	Missouri	9
Connecticut	6	New Jersey	12
District of Columbia	23	New York	446
Florida	2	North Carolina	2
Georgia	13	Ohio	10
Illinois	175	Oklahoma	5
Indiana	6	Oregon	18
Iowa	7	Pennsylvania	40
Kansas	2	South Dakota	1
Kentucky	6	Tennessee	5
Louisiana	16	Texas	13
Maine	1	Utah	2
Maryland	8	Virginia	2
Massachusetts	87	Washington	6
Michigan	52	Wisconsin	10
		Total	1,074

These courses, consisting of refresher courses of more than five days to intensive courses extending over one year, were offered in the following subjects. The number of courses in each subject is also given.

Allergy	25	Neurology and psychiatry	58
Anatomy	42	Nuclear physics	1
Anesthesiology	22	Nutrition	4
Arthritis	5	Obstetrics and gynecology	69
Bacteriology	7	Ophthalmology	52
Basic sciences	25	Oral medicine	1
Biochemistry	1	Orthopedic surgery	17
Cardiovascular disease	63	Otolaryngology	26
Chest diseases	26	Otorhinolaryngology	6
Dermatology and syphilology	23	Pathology	36
Diabetes	9	Pediatrics	50
Electrocardiography	42	Pharmacology	1
Electroencephalography	9	Physical medicine	9
Endocrinology	33	Physiology	19
Endoscopy	16	Poliomyelitis	4
Fractures	6	Proctology	14
Gastroenterology	37	Public health	14
General medicine	41	Radiology	45
Genetics	1	Surgery	67
Geriatrics	1	Therapy	5
Hematology	24	Tropical medicine	2
Histology	1	Urology	27
Internal medicine	76	Venereal diseases	6
Malignant diseases	6	Total	1,074

The length of these courses varied from six days to one month for 435 courses. There were 500 courses offered ranging in length from one to four months and 96 from five to twelve months. There were 27 one year courses and 2 given for three years, while the length of the course in 14 instances was arranged.

The description of these intensive courses indicated that instruction was both clinical and didactic. Instruction was both didactic and clinical for 550 courses, didactic only for 197 and clinical only for 39. The remainder did not specify the type of instruction.

Medical school facilities were used for 543 courses, hospitals for 256 and clinics for 20. In many instances, two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 23 courses. The balance did not specify the facilities used.

The faculties of medical schools served as instructors in 572 courses. Additional instructors were specialists in their field (in 502 instances), chosen mainly from physicians residing within the state in which the course was given but including as well physicians from outside the state.

Courses were offered during every month last year, and in 125 instances they were arranged to suit the convenience of physician-students. There were 88 courses available for specialists only. Fees varied considerably, ranging from $1.50 to $1,000. In 39 instances no fee was charged.

One hundred and thirty-five agencies participated in the sponsoring of these courses, including 49 medical schools, 41 special societies, 13 state medical societies, 12 hospitals, 11 health departments, 4 universities and county medical societies, and the United States Public Health Service.

There were 227 courses reported cancelled.

The attendance reported for 984 of the 1,074 courses given was 28,507. Attendance at courses by medical schools alone totaled 15,695.

Clinical Conferences, Graduate Assemblies, Study Courses and Chautauqua Courses.—In twenty-six states and the District of Columbia, 67 clinical conferences, graduate assemblies and study and chautauqua courses were held during 1948-1949. This type of training varied in length from one day sessions to two weeks for conferences, assemblies and study courses. In six states, chautauqua courses were held at various times throughout the states in four to twelve centers. Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments and special societies. The majority surveyed topics in general medicine and surgery. Other subjects covered were cardiovascular disease, malignant diseases, obstetrics and gynecology, neurology and psychiatry, ophthalmology, therapy and venereal diseases. Instruction was both didactic and clinical. The facilities of hospitals, clinics and medical schools were used. The registration fees ranged from $3 to $75. They were given during every month except May and August. The attendance numbered 38,058.

Summary.—Some form of continuation study was provided during 1948-1949 in thirty-five states and the District of Columbia. Table 23 summarizes for these three groups the number of courses given, the number who reported attendance and the total attendance together with similar figures for the three previous years. While the attendance for the short review courses was less than that of last year, there was a noticeable increase in attendance at longer courses, clinical conferences, graduate assemblies and study and chautauqua courses. The total for all three groups last year (83,386) represents the greatest number to seek such training in a given year. In 1945-1946 the attendance totaled 45,955; in 1946-1947 it was 59,811, and in 1947-1948 it was 82,803.

The offering of these opportunities indicates an expanding use of the facilities of medical schools and hospitals and deserves commendation.

INTERNSHIPS AND RESIDENCIES

The following internships and residency training programs have been approved since the publication of the list of Approved Residencies and Fellowships in The Journal, May 14, 1949. A number of hospitals not included in this list have recently been surveyed by representatives of the Council and have been recommended for residency approval. These hospitals will be notified as soon as final action on their applications has been completed.

Information regarding these hospitals will appear in the next Internship and Residency Number of The Journal.

ADDITIONAL INTERNSHIPS APPROVED

Percy Jones General Hospital	Battle Creek, Mich.
Valley Forge General Hospital	Phoenixville, Pa.
Veterans Administration Hospital	Los Angeles
Memorial Hospital	Elmhurst, Ill.
Mercy Hospital	Oklahoma City
Rochester General Hospital	Rochester, Pa.

ADDITIONAL RESIDENCIES APPROVED

Anesthesiology

American Hospital	Chicago

Dermatology and Syphilology

Employees' Hospital of the Tennessee [illegible], Iron and Railroad [illegible]	Fairfield, Ala.
Philadelphia General	Philadelphia

General Practice

Missouri Methodist Hospital	St. Joseph, Mo.

Internal Medicine

Veterans Administration Hospital	Lincoln, Neb.
City Hospital	Mobile, Ala.

Obstetrics and Gynecology

St. Vincent's Hospital	Bridgeport, Conn.
Hospital of St. Raphael	New Haven, Conn.
St. Luke's Hospital	Kansas City, Mo.
French Hospital	New York City
Jewish Memorial Hospital	New York City
Sydenham Hospital	New York City
United Hospital	Port Chester, N. Y.
St. Rita's Hospital	Lima, Ohio
St. Vincent's Hospital	Toledo, Ohio

Ophthalmology

Valley Forge General Hospital	Phoenixville, Pa.
Veterans Administration Hospital	Jefferson Barracks, Mo.
Arkansas Baptist Hospital	Little Rock, Ark.
Montefiore Hospital for Chronic Diseases	New York City
New York Hospital	New York City
Sea View Hospital	Staten Island, N. Y.
North Carolina Baptist Hospital	Winston-Salem, N. C.

Otolaryngology

Veterans Administration Hospital	Wadsworth, Kan.
Veterans Administration Hospital (West Roxbury)	Boston, Mass.

Pathology

Veterans Administration Hospital	Dayton, Ohio
St. Luke's Hospital	San Francisco
St. Mary of Nazareth Hospital	Chicago
Holyoke Hospital (1)	Holyoke, Mass.
Edward W. Sparrow Hospital	Lansing, Mich.
Saginaw General Hospital	Saginaw, Mich.
St. Barnabas Hospital for Chronic Diseases (2)	New York City
United Hospital	Port Chester, N. Y.
Peoples Hospital	Akron, Ohio
St. Rita's Hospital	Lima, Ohio
Hospital of the Woman's Medical College of Pennsylvania	Philadelphia

1. Affiliated with Bingham Associates Laboratory, Holyoke, Massachusetts.
2. Affiliated with St. Agnes Hospital, White Plains, New York.

Pediatrics

Walter Reed General Hospital	Washington, D. C.
Children's Mercy Hospital	Kansas City, Mo.
Bayamon District Hospital	Bayamon, Puerto Rico

Psychiatry

Georgetown University Medical Center	Washington, D. C.

Pulmonary Diseases

Veterans Administration Hospital	Oteen, N. C.

Radiology

Veterans Administration Hospital	Wichita, Kan.
Veterans Administration Hospital	Columbia, S. C.
Veterans Administration Hospital	White River Jct., Vt.
St. Francis Hospital	San Francisco
St. Mary's Hospital	Waterbury, Conn.
Loretto Hospital	Chicago
Wesley Hospital	Wichita, Kan.
Eastern Maine General Hospital	Bangor, Maine
Cambridge City Hospital	Cambridge, Mass.
Leila Y. Post Montgomery Hospital	Battle Creek, Mich.
Lebanon Hospital	New York City
St. John's Hospital	Cleveland
Hospital of the Woman's Medical College of Pennsylvania	Philadelphia
Bishop DeGoesbriand Hospital	Burlington, Vt.

Thoracic Surgery

Los Angeles Sanatorium	Duarte, Calif.

Urology

French Hospital	New York City
Jewish Hospital	Philadelphia

SURGERY

The services listed below are approved by the Council and the American Board of Surgery in accordance with the Board's recently announced training requirements (see Approved Examining Boards in the Specialties, page 86. Hospitals designated by an asterisk (*) offer training of less than three years in duration. Their programs, however, are integrated with accepted graded residencies and are approved as affiliating services.

Name of Hospital	Location	Length of Approved Program, Years
United States Army		
Letterman General Hospital	San Francisco	3-4
Fitzsimons General Hospital	Denver	3-4
Walter Reed General Hospital	Washington, D. C.	3-4
Oliver General Hospital	Augusta, Ga.	3-4
Brooke General Hospital	San Antonio, Texas	3-4
Gorgas Hospital	Ancon, C. Z.	3-4
United States Navy		
U. S. Naval Hospital	Long Beach, Calif.	4
U. S. Naval Hospital	Oakland, Calif.	4
U. S. Naval Hospital	San Diego	4
United States Navy—Continued		
U. S. Naval Hospital	Great Lakes, Ill.	*
U. S. Naval Hospital	Bethesda, Md.	4
U. S. Naval Hospital	Chelsea, Mass.	4
U. S. Naval Hospital	St. Alban's, New York	4
U. S. Naval Hospital	Philadelphia	4
United States Public Health Service		
U. S. Marine Hospital	San Francisco	3
U. S. Marine Hospital	New Orleans	3
U. S. Marine Hospital	Baltimore	3

SURGERY—Continued

Name of Hospital	Location	Length of Approved Program, Years
United States Public Health Service—Continued		
U. S. Marine Hospital	Boston	3
U. S. Marine Hospital	Detroit	3
U. S. Marine Hospital	Stapleton, S. I., N. Y.	3
U. S. Marine Hospital	Seattle	3
Federal Security Agency		
Freedmen's Hospital	Washington, D. C.	4
Veterans Administration		
Veterans Administration Center	Los Angeles	3-4
Veterans Administration Hospital	San Francisco	3-4
Veterans Administration Hospital	Van Nuys, Calif.	3-4
Veterans Administration Hospital	Fort Logan, Colo.	3-4
Veterans Administration Hospital	Newington, Conn.	3-4
Veterans Administration Hospital	Washington, D. C.	3-4
Veterans Administration Hospital	Coral Gables, Fla.	3
Veterans Administration Hospital	Chamblee, Ga.	3-4
Veterans Administration Hospital	Hines, Ill.	4
Veterans Administration Hospital	Indianapolis	4
Veterans Administration Center	Des Moines, Iowa	3-4
Veterans Administration Center	Wadsworth, Kan.	3-4
Veterans Administration Hospital	Louisville, Ky.	4
Veterans Administration Hospital	New Orleans	3-4
Veterans Administration Hospital	Fort Howard, Md.	4
Veterans Administration Hospital	Perry Point, Md.	4
Veterans Administration Hospital (West Roxbury)	Boston	3-4
Veterans Administration Hospital	Framingham, Mass.	4
Veterans Administration Hospital	Dearborn, Mich.	3-4
Veterans Administration Hospital	Minneapolis	3-4
Veterans Administration Hospital	Jefferson Bks., Mo.	4
Veterans Administration Hospital	Lincoln, Neb.	3
Veterans Administration Hospital	Albuquerque, N. M.	3
Veterans Administration Hospital	Batavia, N. Y.	3
Veterans Administration Hospital	New York City	3-4
Veterans Administration Hospital	Staten Island, N. Y.	3-4
Veterans Administration Hospital	Cleveland	3-4
Veterans Administration Center	Dayton, Ohio	4
Veterans Administration Hospital	Oklahoma City	3-4
Veterans Administration Hospital	Portland, Oregon	3-4
Veterans Administration Hospital	Aspinwall, Pa.	3-4
Veterans Administration Hospital	Columbia, S. C.	3-4
Veterans Administration Hospital	Memphis, Tenn.	3-4
Veterans Administration Hospital	Nashville, Tenn.	4
Veterans Administration Hospital	Dallas, Texas	3-4
Veterans Administration Hospital	Houston, Texas	4
Veterans Administration Hospital	McKinney, Texas	4
Veterans Administration Hospital	Salt Lake City	3
Veterans Administration Center	White River Jct., Vt.	4
Veterans Administration Hospital	Richmond, Va.	4
Veterans Administration Center	Milwaukee	3-4
Nonfederal		
Jefferson-Hillman Hospital	Birmingham, Ala.	4
Carraway Methodist Hospital	Birmingham, Ala.	3
Employees' Hospital of the Tenn. Coal, Iron & R. R. Co	Fairfield, Ala.	4
University Hospital	Little Rock, Ark.	4
San Joaquin General Hospital	French Camp, Calif.	3
General Hospital of Fresno Co	Fresno, Calif.	3
Cedars of Lebanon Hospital	Los Angeles	3
Hospital of the Good Samaritan	Los Angeles	3
Los Angeles County Hospital	Los Angeles	4
White Memorial Hospital	Los Angeles	3
Highland-Almeda Co. Hospital	Oakland, Calif.	3
San Bernadino County Charity Hosp.	San Bernadino, Calif.	3
Mercy Hospital	San Diego, Calif.	3
San Diego County General Hospital	San Diego, Calif.	3
Franklin Hospital	San Francisco	4
Mount Zion Hospital	San Francisco	4
San Francisco Hospital	San Francisco	4
Southern Pacific General Hospital	San Francisco	3
Stanford University Hospital	San Francisco	4
University of California Hospital	San Francisco	4
Santa Barbara Cottage Hospital	Santa Barbara, Calif.	3
Los Angeles County Harbor General Hospital	Torrance, Calif.	3
Presbyterian Hospital	Denver	3
St. Joseph's Hospital	Denver	3
St. Luke's Hospital	Denver	3
University of Colorado Medical Center		
Colorado General Hospital	Denver	4
Denver General Hospital	Denver	4
Corwin Hospital	Pueblo, Colo.	3
Bridgeport Hospital	Bridgeport, Conn.	3
Hartford Hospital	Hartford, Conn.	4
St. Francis Hospital	Hartford, Conn.	3
New Britain General Hospital	New Britain, Conn.	3
Grace-New Haven Community Hospital		
Grace Unit	New Haven, Conn.	4
New Haven Unit	New Haven, Conn.	4
Hospital of St. Raphael	New Haven, Conn.	4
Delaware Hospital	Wilmington, Del.	4
Memorial Hospital	Wilmington, Del.	3
Central Dispensary and Emergency Hospital	Washington, D. C.	4
Gallinger Municipal Hospital	Washington, D. C.	4
Garfield Memorial Hospital	Washington, D. C.	3
Georgetown University Hospital	Washington, D. C.	4
George Washington University Hospital	Washington, D. C.	4
Providence Hospital	Washington, D. C.	3
Duval Medical Center	Jacksonville, Fla.	4

Name of Hospital	Location	Length of Approved Program, Years
Nonfederal—Continued		
St. Vincent's Hospital	Jacksonville, Fla.	3
Jackson Memorial Hospital	Miami, Fla.	3
Crawford W. Long Memorial Hospital	Atlanta, Ga.	3
Grady Memorial Hospital	Atlanta, Ga.	4
University Hospital	Augusta, Ga.	3
Emory University Hospital	Emory University, Ga.	3
American Hospital	Chicago	3
Augustana Hospital	Chicago	4
Chicago Memorial Hospital	Chicago	3
Children's Memorial Hospital	Chicago	*
Cook County Hospital	Chicago	4
Grant Hospital	Chicago	3
Illinois Masonic Hospital	Chicago	3
Michael Reese Hospital	Chicago	4
Mount Sinai Hospital	Chicago	3
Passavant Memorial Hospital	Chicago	4
Presbyterian Hospital	Chicago	4
Provident Hospital	Chicago	3
Research and Educational Hospitals	Chicago	4
St. Elizabeth Hospital	Chicago	3
St. Luke's Hospital	Chicago	4
St. Mary of Nazareth Hospital	Chicago	3
University of Chicago Clinics	Chicago	4
Wesley Memorial Hospital	Chicago	4
Evanston Hospital	Evanston, Ill.	4
West Suburban Hospital	Oak Park, Ill.	3
Indianapolis General Hospital	Indianapolis	3
Indiana University Medical Center	Indianapolis	4
St. Elizabeth Hospital	LaFayette, Ind.	3
Iowa Methodist Hospital	Des Moines, Iowa	3
University Hospital	Iowa City	4
University of Kansas Medical Center	Kansas City, Kan.	4
Wesley Hospital	Wichita, Kan.	3
Louisville General Hospital	Louisville, Ky.	4
Norton Memorial Infirmary	Louisville, Ky.	*
St. Joseph Infirmary	Louisville, Ky.	4
Charity Hospital of Louisiana	New Orleans	4
Ochsner Foundation Hospital	New Orleans	3
Southern Baptist Hospital	New Orleans	3
Touro Infirmary	New Orleans	3
Shreveport Charity Hospital	Shreveport, La.	3
Maine General Hospital	Portland, Maine	3
Baltimore City Hospitals	Baltimore	3
Church Home and Hospital	Baltimore	3
Franklin Square Hospital	Baltimore	4
Johns Hopkins Hospital	Baltimore	4
Maryland General Hospital	Baltimore	3
Mercy Hospital	Baltimore	4
Provident Hospital and Free Dispensary	Baltimore	3
St. Agnes Hospital	Baltimore	3
Sinai Hospital	Baltimore	4
South Baltimore General Hospital	Baltimore	3
Union Memorial Hospital	Baltimore	4
University Hospital	Baltimore	4
West Baltimore General Hospital	Baltimore	3
Beth Israel Hospital	Boston	4
Beverly Hospital	Beverly, Mass.	3
Boston City Hospital	Boston	4
Carney Hospital	Boston	3
Children's Hospital	Boston	*
Massachusetts General Hospital	Boston	4
Massachusetts Memorial Hospitals	Boston	4
New England Hospital for Women and Children	Boston	3
Peter Bent Brigham Hospital	Boston	4
St. Elizabeth's Hospital	Boston	3
Truesdale Hospital	Fall River, Mass.	*
Newton-Wellesley Hospital	Newton, Mass.	3
Salem Hospital	Salem, Mass.	*
Memorial Hospital	Worcester, Mass.	3
St. Vincent Hospital	Worcester, Mass.	3
St. Joseph's Mercy Hospital	Ann Arbor, Mich.	3
University Hospital	Ann Arbor, Mich.	4
Leila Y. Post Montgomery Hospital	Battle Creek, Mich.	3
Alexander Blain Hospital	Detroit	3
City of Detroit Receiving Hospital	Detroit	3
Evangelical Deaconess Hospital	Detroit	3
Grace Hospital	Detroit	3
Harper Hospital	Detroit	3
Henry Ford Hospital	Detroit	4
Providence Hospital	Detroit	3
St. Joseph's Mercy Hospital	Detroit	3
St. Mary's Hospital	Detroit	3
Wayne County General Hospital and Infirmary	Eloise, Mich.	3
Hurley Hospital	Flint, Michigan	3
Blodgett Memorial Hospital	Grand Rapids, Mich.	3
Butterworth Hospital	Grand Rapids, Mich.	4
St. Mary's Hospital	Grand Rapids, Mich.	3
Highland Park General Hospital	Highland Park, Mich.	3
Bronson Methodist Hospital	Kalamazoo, Mich.	3
Pontiac General Hospital	Pontiac, Mich.	3
Saginaw General Hospital	Saginaw, Mich.	3
Minneapolis General Hospital	Minneapolis	3
Northwestern Hospital	Minneapolis	3
St. Barnabas Hospital	Minneapolis	*

SURGERY—Continued

Name of Hospital	Location	Length of Approved Program, Years
Nonfederal—Continued		
University of Minnesota Hospitals	Minneapolis	4
Mayo Foundation	Rochester, Minn.	3
Ancker Hospital	St. Paul	3
Charles T. Miller Hospital	St. Paul	3
Lutheran Hospital	Vicksburg, Miss.	3
Kansas City General Hospital No. 1	Kansas City, Mo.	3
St. Joseph Hospital	Kansas City, Mo.	3
St. Luke's Hospital	Kansas City, Mo.	3
Barnes Hospital	St. Louis	4
Homer G. Phillips Hospital	St. Louis	4
Jewish Hospital	St. Louis	3
Missouri Baptist Hospital	St. Louis	3
St. John's Hospital	St. Louis	3
St. Louis City Hospital	St. Louis	4
St. Mary's Group of Hospitals	St. Louis	3
Bishop Clarkson Memorial Hospital	Omaha	3
Creighton Memorial St. Joseph's Hosp.	Omaha	3
Nebraska Methodist Hospital	*Omaha*	*
University of Nebraska Hospital	Omaha	3
Cooper Hospital	Camden, N. J.	3
West Jersey Hospital	Camden, N. J.	3
Jersey City Hospital	Jersey City, N. J.	3
Hospital of St. Barnabas and for Women and Children	Newark, N. J.	3
Newark Beth Israel Hospital	Newark, N. J.	3
Albany Hospital	Albany, N. Y.	3
Binghamton City Hospital	Binghamton, N. Y.	3
Beth El Hospital	Brooklyn	3
Brooklyn Hospital	Brooklyn	3
Cumberland Hospital	Brooklyn	4
Jewish Hospital	Brooklyn	4
Kings County Hospital	Brooklyn	4
Long Island College Hospital	Brooklyn	4
Maimonides Hospital	Brooklyn	3
Methodist Hospital	Brooklyn	3
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	3
St. Catherine's Hospital	Brooklyn	3
St. John's Hospital	Brooklyn	3
Wyckoff Heights Hospital	Brooklyn	3
Buffalo *General Hospital*	Buffalo	3
Edward J. Meyer Memorial Hospital	Buffalo	4
Millard Fillmore Hospital	Buffalo	3
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	3
Mary Imogene Bassett Hospital	Cooperstown, N. Y.	3
Jamaica Hospital	Jamaica, N. Y.	3
Queens General Hospital	Jamaica, N. Y.	4
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.	3
Nassau Hospital	Mineola, N. Y.	3
New Rochelle Hospital	New Rochelle, N. Y.	3
Bellevue Hospital		
Div. I—Columbia University	New York City	3
Div. II—Cornell University	New York City	4
Div. III—New York University	New York City	4
Div. IV—Open Division	New York City	4
Beth Israel Hospital	New York City	3
Bronx Hospital	New York City	3
Flower and Fifth Avenue Hospitals	New York City	4
French Hospital	New York City	3
Goldwater Memorial Hospital, III Surgical Service	New York City	4
Harlem Hospital	New York City	3
Lenox Hill Hospital	New York City	3
Lincoln Hospital	New York City	3
Metropolitan Hospital	New York City	4
Montefiore Hospital for Chronic Diseases	New York City	3
New York City Hospital	New York City	3
New York Hospital	New York City	4
New York Polyclinic Medical School and Hospital	New York City	3
Presbyterian Hospital	New York City	4
Roosevelt Hospital	New York City	4
St. Clare's Hospital	New York City	3
St. Luke's Hospital	New York City	4
St. Vincent's Hospital	New York City	4
University Hospital	New York City	4
Genesee Hospital	Rochester, N. Y.	4
Highland Hospital	Rochester, N. Y.	3
Rochester General Hospital	Rochester, N. Y.	3
Strong Memorial-Rochester Municipal Hospitals	Rochester, N. Y.	4
Ellis Hospital	Schenectady, N. Y.	3
Hospital of the Good Shepherd	Syracuse, N. Y.	3
Grasslands Hospital	Valhalla, N. Y.	3
Duke Hospital	Durham, N. C.	4
Watts Hospital	Durham, N. C.	3
North Carolina Baptist Hospital	Winston-Salem, N. C.	4
City Hospital	Akron, Ohio	4
Peoples Hospital	Akron, Ohio	4
Nonfederal—Continued		
St. Thomas Hospital	Akron, Ohio	3
Aultman Hospital	Canton, Ohio	3
Mercy Hospital	Canton, Ohio	3
Cincinnati General Hospital	Cincinnati	4
Jewish Hospital	Cincinnati	4
St. Mary's Hospital	Cincinnati	3
City Hospital	Cleveland	4
Cleveland Clinic Hospital	Cleveland	3
Lutheran Hospital	Cleveland	4
Mount Sinai Hospital	Cleveland	4
St. Alexis Hospital	Cleveland	3
St. John's Hospital	Cleveland	4
St. Luke's Hospital	Cleveland	4
St. Vincent Charity Hospital	Cleveland	3
University Hospitals	Cleveland	4
Mount Carmel Hospital	Columbus, Ohio	3
Ohio State University Hospital	Columbus, Ohio	4
St. Francis Hospital	Columbus, Ohio	*
White Cross Hospital	Columbus, Ohio	3
Miami Valley Hospital	Dayton, Ohio	3
Huron Road Hospital	East Cleveland, Ohio	3
Lakewood Hospital	Lakewood, Ohio	3
St. Rita's Hospital	Lima, Ohio	3
Mercy Hospital	Toledo, Ohio	3
St. Vincent's Hospital	Toledo, Ohio	3
Toledo Hospital	Toledo, Ohio	3
St. Elizabeth's Hospital	Youngstown, Ohio	4
Youngstown Hospital	Youngstown, Ohio	4
University Hospitals	*Oklahoma City*	3
Hillcrest Memorial Hospital	Tulsa, Okla.	3
Emanuel Hospital	Portland, Ore.	3
Good Samaritan Hospital	Portland, Ore.	3
St. Vincent's Hospital	Portland, Ore.	3
University of Oregon Medical School Hospitals and Clinics	Portland, Ore.	4
Abington Memorial Hospital	Abington, Pa.	3
St. Luke's Hospital	Bethlehem, Pa.	3
Bradford Hospital	Bradford, Pa.	*
Bryn Mawr Hospital	Bryn Mawr, Pa.	3
George F. Geisinger Memorial Hospital	Danville, Pa.	3
St. Vincent's Hospital	Erie, Pa.	3
Graduate Hospital of the University of Pennsylvania	Philadelphia	3
Hospital of the University of Pennsylvania	Philadelphia	4
Jefferson Medical College Hospitals	Philadelphia	4
Jewish Hospital	Philadelphia	3
Lankenau Hospital	Philadelphia	3
Mount Sinai Hospital	Philadelphia	3
Pennsylvania Hospital	Philadelphia	4
Philadelphia General Hospital	Philadelphia	4
Presbyterian Hospital	Philadelphia	3
Temple University Hospital	Philadelphia	3
Woman's Hospital	Philadelphia	3
Children's Hospital	Pittsburgh	*
Mercy Hospital	Pittsburgh	3
Montefiore Hospital	Pittsburgh	3
Pittsburgh Hospital	Pittsburgh	3
Presbyterian Hospital	Pittsburgh	3
St. Francis Hospital	Pittsburgh	3
Western Pennsylvania Hospital	Pittsburgh	3
Robert Packer Hospital	Sayre, Pa.	3
York Hospital	York, Pa.	3
Rhode Island Hospital	Providence, R. I.	3
Roper Hospital	Charleston, S.C.	4
Columbia Hospital	Columbia, S.C.	3
Baroness Erlanger Hospital	Chattanooga, Tenn.	4
Knoxville General Hospital	Knoxville, Tenn.	3
John Gaston Hospital	Memphis, Tenn.	4
Methodist Hospital	Memphis, Tenn.	3
Nashville General Hospital	Nashville, Tenn.	3
St. Thomas Hospital	Nashville, Tenn.	4
Vanderbilt University Hospital	Nashville, Tenn.	4
Baylor University Hospital	Dallas, Texas	3
Gaston Hospital	Dallas, Texas	*
Parkland Hospital	Dallas, Texas	3
University of Texas Medical Branch Hospitals	Galveston, Texas	4
Jefferson Davis Hospital	Houston, Texas	4
Methodist Hospital	Houston, Texas	*
Scott and White Hospital	Temple, Texas	3
Wichita Falls Clinic Hospital	Wichita Falls, Texas	3
Dr. W. H. Groves Latter-Day Saints Hospital	Salt Lake City	3
Holy Cross Hospital	Salt Lake City	*
St. Mark's Hospital	Salt Lake City	3
Salt Lake County General Hospital	Salt Lake City	4
Mary Fletcher Hospital	Burlington, Vt.	3
Alexandria Hospital	Alexandria, Va.	3

SURGERY—Continued

Name of Hospital	Location	Length of Approved Program, Years
Nonfederal—Continued		
University of Virginia Hospital	Charlottesville, Va.	3
Chesapeake and Ohio Hospital	Clifton Forge, Va.	3
Norfolk General Hospital	Norfolk, Va.	3
Medical College of Virginia Hosp. Div.	Richmond, Va.	4
King County Hospital Unit No. 1 (Harborview)	Seattle	3
Virginia Mason Hospital	Seattle	3
Beckley Hospital	Beckley, W. Va.	3
Charleston General Hospital	Charleston, W. Va.	3
Laird Memorial Hospital	Montgomery, W. Va.	3
Nonfederal—Continued		
St. Joseph's Hospital	Parkersburg, W. Va.	3
Madison General Hospital	Madison, Wis.	3
State of Wisconsin General Hospital	Madison, Wis.	3
Columbia Hospital	Milwaukee	3
Evangelical Deaconess Hospital	Milwaukee	3
Milwaukee Children's Hospital	Milwaukee	*
Milwaukee Hospital	Milwaukee	3
Milwaukee County Hospital	Milwaukee	3
St. Joseph's Hospital	Milwaukee	3
San Juan City Hospital	San Juan, Puerto Rico	3

The following services are approved by the Council as offering satisfactory training programs of one or two years in preparation for residency training in the surgical specialties. (As previously announced, training in hospitals listed in the Internship and Residency Number of The Journal, May 14, 1949, as approved for surgical residencies will be accepted by the American Board of Surgery through July 1, 1950.)

St. Joseph's Hospital	Phoenix, Ariz.
Tucson Medical Center	Tucson, Ariz.
Arkansas Baptist Hospital	Little Rock, Ark.
St. Vincent Infirmary	Little Rock, Ark.
Herrick Memorial Hospital	Berkeley, Calif.
Seaside Memorial Hospital	Long Beach, Calif.
California Hospital	Los Angeles
Queen of Angels Hospital	Los Angeles
St. Vincent's Hospital	Los Angeles
Santa Fe Coast Lines Hospital	Los Angeles
Peralta Hospital	Oakland, Calif.
Permanente Foundation Hosp.	Oakland, Calif.
Samuel Merritt Hospital	Oakland, Calif.
Collis P. and Howard Huntington Memorial Hospital	Pasadena, Calif.
Children's Hospital	San Francisco
French Hospital	San Francisco
Mary's Help Hospital	San Francisco
St. Luke's Hospital	San Francisco
St. Mary's Hospital	San Francisco
Santa Clara County Hospital	San Jose, Calif.
St. John's Hospital	Santa Monica, Calif.
Children's Hospital	Denver
Lawrence and Memorial Associated Hospitals	New London, Conn.
Norwalk Hospital	Norwalk, Conn.
Wilmington General Hospital	Wilmington, Del.
Doctors Hospital	Washington, D. C.
Sibley Memorial Hospital	Washington, D. C.
Riverside Hospital	Jacksonville, Fla.
St. Luke's Hospital	Jacksonville, Fla.
Georgia Baptist Hospital	Atlanta, Ga.
Piedmont Hospital	Atlanta, Ga.
St. Joseph's Infirmary	Atlanta, Ga.
Henrotin Hospital	Chicago
Hospital of St. Anthony de Padua	Chicago
Illinois Central Hospital	Chicago
Lutheran Deaconess Home and Hosp.	Chicago
Mercy Hospital	Chicago
Norwegian-American Hospital	Chicago
Ravenswood Hospital	Chicago
St. Anne's Hospital	Chicago
St. Joseph Hospital	Chicago
Women and Children's Hospital	Chicago
Woodlawn Hospital	Chicago
St. Francis Hospital	Evanston, Ill.
Little Company of Mary Hospital	Evergreen Park, Ill.
St. Francis Hospital	Peoria, Ill.
Methodist Hospital	Indianapolis
St. Vincent's Hospital	Indianapolis
Ball Memorial Hospital	Muncie, Ind.
St. Margaret's Hospital	Kansas City, Kan.
St. Francis Hospital	Wichita, Kan.
St. Joseph's Hospital	Lexington, Ky.
Hotel Dieu, Sisters' Hospital	New Orleans
Bon Secours Hospital	Baltimore
Hospital for Women	Baltimore
St. Joseph's Hospital	Baltimore
Suburban Hospital	Bethesda, Md.
Lahey Clinic	Boston
Cambridge City Hospital	Cambridge, Mass.
Mount Auburn Hospital	Cambridge, Mass
Lynn Hospital	Lynn, Mass.
Malden Hospital	Malden, Mass.
Quincy City Hospital	Quincy, Mass.
Worcester City Hospital	Worcester, Mass.
Charles Godwin Jennings Hospital	Detroit
Mount Carmel Mercy Hospital	Detroit
Woman's Hospital	Detroit
St. Luke's Hospital	Duluth, Minn.
St. Mary's Hospital	Duluth, Minn.
Asbury Hospital	Minneapolis
Lutheran Deaconess Home and Hospital	Minneapolis
Swedish Hospital	Minneapolis
Mercy Hospital-Street Memorial	Vicksburg, Miss.
St. Louis County Hospital	Clayton, Mo.
Ellis Fischel State Cancer Hosp.	Columbia, Mo.
Menorah Hospital	Kansas City, Mo.
Research Hospital	Kansas City, Mo.
St. Mary's Hospital	Kansas City, Mo.
De Paul Hospital	St. Louis
Missouri Pacific Hospital	St. Louis
St. Anthony's Hospital	St. Louis
St. Luke's Hospital	St. Louis
Montana Deaconess Hosp.	Great Falls, Mont.
Atlantic City Hospital	Atlantic City, N. J.
Hackensack Hospital	Hackensack, N. J.
Mountainside Hospital	Montclair, N. J.
Burlington County Hosp.	Mount Holly, N. J.
Fitkin Memorial Hospital	Neptune, N. J.
Presbyterian Hospital	Newark, N. J.
Paterson General Hospital	Paterson, N. J.
St. Francis Hospital	Trenton, N. J.
Brooklyn Cancer Institute	Brooklyn
Coney Island Hospital	Brooklyn
Greenpoint Hospital	Brooklyn
St. Mary's Hospital	Brooklyn
Children's Hospital	Buffalo
Deaconess Hospital	Buffalo
Sisters of Charity Hospital	Buffalo
Mary McClellan Hospital	Cambridge, N. Y.
Meadowbrook Hospital	Hempstead, N. Y.
Mary Immaculate Hospital	Jamaica, N. Y.
Mount Vernon Hospital	Mount Vernon, N. Y.
Fordham Hospital	New York City
Hospital for Special Surgery	New York City
Knickerbocker Hospital	New York City
Morrisania City Hospital	New York City
Mount Sinai Hospital	New York City
New York Infirmary	New York City
Sydenham Hospital	New York City
St. Mary's Hospital	Rochester, N. Y.
White Plains Hospital	White Plains, N. Y.
Charlotte Memorial Hospital	Charlotte, N. C.
James Walker Memorial Hospital	Wilmington, N. C.
City Memorial Hospital	Winston-Salem, N. C.
Kate Bitting Reynolds Memorial Hospital	Winston-Salem, N. C.
Bismarck Evangelical Hospital	Bismarck, N. D.
St. Luke's Hospital	Fargo, N. D.
Trinity Hospital	Minot, N. D.
Children's Hospital	Akron, Ohio
Christ Hospital	Cincinnati
Deaconess Hospital	Cincinnati
Good Samaritan Hospital	Cincinnati
Fairview Park Hospital	Cleveland
Mercy Hospital	Hamilton, Ohio
St. Anthony Hospital	Oklahoma City
St. John's Hospital	Tulsa, Okla.
Portland Sanitarium and Hosp.	Portland, Ore.
Providence Hospital	Portland, Ore.
Allentown Memorial Hospital	Allentown, Pa.
Sacred Heart Hospital	Allentown, Pa.
Hamot Hospital	Erie, Pa.
Harrisburg Hospital	Harrisburg, Pa.
St. Joseph's Hospital	Lancaster, Pa.
Episcopal Hospital	Philadelphia
Frankford Hospital	Philadelphia
Germantown Dispensary and Hospital	Philadelphia
Hahnemann Hospital	Philadelphia
Hospital of the Woman's Medical College of Pennsylvania	Philadelphia
Allegheny General Hospital	Pittsburgh
Reading Hospital	Reading, Pa.
St. Joseph's Hospital	Reading, Pa.
Washington Hospital	Washington, Pa.
Mercy Hospital	Wilkes-Barre, Pa.
Wilkes-Barre General Hosp.	Wilkes-Barre, Pa.
Williamsport Hospital	Williamsport, Pa.
St. Joseph Hospital	Memphis, Tenn.
George W. Hubbard Hospital of Meharry Medical College	Nashville, Tenn.
Methodist Hospital	Dallas, Texas
St. Paul's Hospital	Dallas, Texas
Harris Hospital	Fort Worth, Texas
Hermann Hospital	Houston, Texas
Memorial Hospital	Houston, Texas
St. Joseph Infirmary	Houston, Texas
Southern Pacific Hospital	Houston, Texas
Thomas D. Dee Memorial Hosp.	Ogden, Utah
Bishop DeGoesbriand Hospital	Burlington, Vt.
Arlington Hospital	Arlington, Va.
De Paul Hospital	Norfolk, Va.
Johnston-Willis Hospital	Richmond, Va.
Jefferson Hospital	Roanoke, Va.
Doctors Hospital	Seattle
Providence Hospital	Seattle
Swedish Hospital	Seattle
St. Luke's Hospital	Spokane
Chesapeake and Ohio Hospital	Huntington, W. Va.
St. Mary's Hospital	Huntington, W. Va.
Myers Clinic Hospital	Philippi, W. Va.
La Crosse Lutheran Hospital	La Crosse, Wis.
Methodist Hospital	Madison, Wis.
St. Mary's Hospital	Madison, Wis.
Mount Sinai Hospital	Milwaukee
St. Luke's Hospital	Milwaukee
St. Mary's Hospital	Milwaukee
Queen's Hospital	Honolulu, Hawaii

ESSENTIALS OF AN APPROVED INTERNSHIP

Prepared by the Council on Medical Education and Hospitals of the American Medical Association

(Revised to December 1948)

I. Introduction

1. The primary function of a hospital is to provide facilities where the sick and injured may be given scientific medical care.

2. The operation of a well organized, effective program for the training of interns enhances the quality of care rendered to the sick and in nowise conflicts with the chief purpose for which the hospital is maintained.

3. The internship is one of the most important phases of medical education. The purpose of the internship is to supplement the undergraduate medical course by a well rounded experience of closely supervised clinical practice in diagnosis and therapy. There should be a progressive increase in the intern's responsibilities.

4. Hospitals which are approved for the training of interns accept a serious responsibility to their interns and to the communities in which they may later practice. Internships designed without a well supervised educational program, or arranged merely to provide hospitals with resident personnel to assist in the clinical work of the hospital, cannot be approved.

5. It is recognized that while some hospitals may be unable to meet the educational standards for intern training as set forth in these Essentials, they may be able to offer experience of some value to young physicians who have previously completed an approved internship. These hospitals may consider the appointment of paid house officers to assist in conducting the professional work of the hospital.

II. The Internship

1. Basis of the Internship.—Under careful supervision the intern participates in the care of patients and receives in return instruction from the hospital staff in the clinical and laboratory aspects of his profession.

2. Length of Internship.—An internship should be of not less than twelve months' duration. Longer periods of service are preferable because they permit a more satisfactory educational program and allow the intern sufficient time in which to be trained adequately to assume increasing responsibility in various fields of medicine.

3. Types of Internship.—The Council approves "rotating," "mixed" and "straight" internships.

It is the opinion of the Council that a well organized rotating internship is likely to provide the best basic training for either the future general practitioner or the specialist.[1]

A rotating internship is defined as one which provides supervised experience in internal medicine, surgery, pediatrics, obstetrics and their related subspecialties. Supervised experience in laboratory and radiologic diagnosis should be included.

In rotating internships of a year's duration the time allotted to internal medicine should equal or exceed the time given to any other service. Too frequent a rotation of assignments or assignment to more than one service at a time is undesirable. No assignment should be for less than two months' duration. Arrangements should be made so that each intern devotes at least three consecutive months respectively to internal medicine and to surgery.

A mixed internship is defined as one which provides supervised experience in two or more, but not in all, of the clinical divisions named.

A straight internship is defined as one which provides supervised experience in a single department, although it may include limited opportunity for work in a related subspecialty. Straight internships are now approved in internal medicine, surgery, pediatrics, obstetrics (with or without gynecology) and pathology. To offer satisfactory straight internships a hospital should be able to maintain approved residencies in the specialties involved.

Except where otherwise specified the material in the following sections applies equally to rotating, mixed and straight internships.

III. Hospitals Eligible for Approved Internships

The experience of the Council indicates that an acceptable rotating internship can be offered only in a general hospital registered by the American Medical Association, admitting at least 2,500 patients or more per year, having an average daily census of at least 85 patients, exclusive of the newborn, and providing a sufficient number and variety of patients in the several branches of medicine in which it undertakes to train interns. For the purpose of this section, patients who are not available to the interns for clinical study are not included.

Hospitals which are unable to meet all the requirements for approval and yet are able to offer satisfactory training for a limited period in one or more of the major clinical divisions, may establish affiliated programs with approved institutions. Such periods of training on an affiliating basis should not exceed 3 months in a 12 months' plan or 6 months in a 24 months' plan.

Separate approval is not extended to hospitals participating in a training program on an affiliating basis. Consideration is given to the affiliation in extending official approval to the parent institution sponsoring the plan. Recognition of affiliated hospitals in official listings of approved hospitals is made by footnote only.

The number of patients for which the individual intern is responsible has an important bearing on the value of the internship as an educational experience. If too few patients are available, adequate experience cannot be obtained. The assignment of an excessive number of patients to an intern, on the other hand, prevents the intern from studying each patient carefully and giving adequate attention to all patients assigned to him. In general, hospitals should appoint interns in such numbers that there will be an average for the hospital of 15 to 25 beds per intern. In determining the ratio which is educationally most desirable, consideration should be given to the amount of responsibility required of the intern for work in outpatient clinics, emergency services, laboratories or similar assignments.

Hospitals offering rotating internships should appoint at least four interns, since a well organized rotating internship covering the major divisions of medicine, surgery, obstetrics and pediatrics usually requires that at least one intern be assigned to each service.

IV. The Hospital Staff

The staff, both visiting and intern, should be composed of physicians who are graduates of medical schools acceptable to the Council. The visiting staff should be composed of physicians having proper qualifications as to licensure (a) who are of unquestioned professional and moral integrity, (b) who are proficient in the fields of practice to which they devote themselves, (c) who give personal attention to the patients under their charge and (d) who pledge themselves, both individually and as a group, to provide ample instruction to the intern staff and to cooperate in their work.

V. Clinical Records

1. Histories.—Adequate records must be maintained. The attending physician or surgeon should be directly responsible for the accuracy and completeness of clinical records concerning all patients under his care.

2. Endorsement of Records.—All case records should show by signature the names of the persons who have written them or their individual parts. Orders for treatment or for special diagnostic studies and progress notes should be signed by the person who writes them. Case histories and physical examinations completed by interns should give evidence of having been verified by the attending physician.

3. Filing and Indexing Records.—A competent medical record librarian should be in charge of the filing and indexing of records. To be of educational value, all case records should be readily available for special study or for reference work. When a patient is readmitted to the hospital, all previous records of his case should be obtainable without undue loss of time. Besides

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[1] Thirteen states now require a rotating internship for licensure.

the usual indexes of patients by name and number, there should be an index arranged according to diagnosis.

4. Annual Report.—Statistics concerning the hospital's clinical work should be compiled monthly and should be available at all times to the medical staff. An annual report should be prepared. It should include analysis of these statistics which should be classified by departments, i. e., internal medicine, surgery, obstetrics, pediatrics, newborn, gynecology, ophthalmology, otolaryngology, etc. For each department at least the following data concerning private and ward services should be included:

(a) Number of patients admitted or discharged.
(b) Number of hospital days of care or average daily census.
(c) Death and necropsies.
(d) Surgical procedures.

VI. Laboratories

1. Equipment.—There should be laboratories for clinical and tissue pathology in the hospital, under competent direction. These laboratories should be equipped and staffed to perform all procedures commonly used for diagnosis, management and therapy.

2. The Pathologist.—The pathologist should hold the degree of doctor of medicine from an acceptable medical school and have qualifications in pathology acceptable to the Council. He should give to the hospital sufficient time to enable him (a) to supervise adequately the work done in the main pathologic laboratory of the hospital and in its branch laboratories, if any, (b) to examine or supervise the examination of all tissues removed in surgical operations and to furnish reports of the gross and microscopic findings, (c) to perform or supervise the performance of all necropsies and render a full report of the findings, (d) to assist in the teaching of interns, (e) to be available for consultation with members of the attending and intern staffs and (f) to attend staff meetings and conduct or participate in clinical-pathologic and departmental conferences.

3. Necropsies.—The hospital should provide proper facilities for the conduct of postmortem examinations. The necropsy rate has come to be recognized as an index of the scientific interest of the medical staff. Well performed postmortem examinations enable progressive physicians to improve their clinical ability. No hospital will be approved for intern training which does not maintain each year a record of necropsies performed in at least twenty per cent of its deaths exclusive of stillbirths and cases released to legal authorities.

4. Records.—A copy of each examination performed in the laboratory of pathology should be retained in the department in addition to the copy filed on the patient's clinical record. All these examination reports should be indexed by name, number and diagnosis. Slides of specimens removed at operation or by necropsy should also be filed in the hospital laboratory.

VII. Radiology

1. Equipment.—This department should be equipped with suitable safe apparatus. The rooms provided for fluoroscopy and for viewing roentgenograms should be large enough to accommodate both interns and attending physicians during the examination of patients or interpretation of films.

2. The Radiologist.—The radiologist should hold the degree of doctor of medicine from an acceptable medical school and have qualifications in radiology acceptable to the Council. He should give to the hospital sufficient time to supervise adequately the technical work of the department, to perform or supervise fluoroscopic examinations, to interpret films, to consult with staff physicians, and to instruct the interns. He should also attend staff meetings and the meetings of his department.

3. Records.—A copy of each examination report should be kept in the department in addition to the one filed in the patient's record. These reports and their original films should be filed and indexed by name, number and diagnosis.

VIII. Medical Library

There should be a medical library, in the charge of a competent librarian, located where it is readily accessible at convenient hours to the interns and staff and containing a useful collection of recent editions of standard text and reference books, monographs and current files of an adequate number of recognized medical journals. Interns should be encouraged and stimulated to use the library in connection with their clinical work and may properly be asked to report on current medical opinion concerning any special case at the bedside or to review current literature or any selected topic more formally at staff conferences or at journal club meetings that may be organized for the purpose of stimulating an interest in reading.

IX. Organization for Intern Training

1. The staff should be organized into departments or sections representing such specialties as internal medicine, surgery, pediatrics, obstetrics, pathology and radiology, so that the professional services of the hospital and the supervision of intern training may be carried out to best advantage. Overdepartmentalization should be avoided, although in large hospitals departmentalization may extend to include such other specialties as ophthalmology, otolaryngology, orthopedic surgery, urology, neurology, psychiatry, plastic surgery, neurological surgery, anesthesiology, physical medicine and contagious diseases. Each department or section should have a chairman or department head to serve for at least a year. He should be well qualified for this position by experience in his special field, should be responsible for the general conduct of the clinical work in his department and should help to formulate and execute the intern training plan to be carried out in this department. Frequent rotation of attending physicians in charge of the various services should be avoided. Assignments should be made so that the intern has ample opportunity to meet his attending physicians frequently for the conduct of systematic ward rounds or clinics and for the study and care of the patients for whom he is responsible. In order to assure the proper teaching relationships between interns and attending physicians, no intern should be called on to assist at any one time an unreasonable number of attending or visiting physicians.

2. Conferences.—The staff, either as a whole or by departments, should conduct periodically and at least once a month staff or departmental meetings in which the work of the various clinical or laboratory services is thoroughly analyzed. Interns should be expected to attend and to take an active part in these meetings. Each month there should be one or more clinical-pathologic conferences. In addition, there should be such conferences as the current activities of the various departments may require. These conferences should be educational in nature and more than a perfunctory demonstration of interesting material. As has been suggested, the intern also should be encouraged to read medical literature in connection with his clinical work and may properly be asked to report formally on current medical opinion concerning any special case.

3. It is recommended that there be a period at the beginning of the internship devoted to orienting the intern in the administrative and professional organization of the hospital, and in the facilities available in such ancillary services as social service, dietetics and occupational therapy. This orientation may be given either in the period immediately before the intern reports for duty or during the first week or two of his service in the hospital.

4. Intern Committee.—There should be a committee of the staff chosen from the chairmen of the several departments in the hospital, charged with the duty of organizing, supervising and evaluating the plan of intern instruction. The teaching obligations of individual staff members cannot be delegated to this committee but should be supervised by it.

5. Director of Intern Education.—The appointment of a director of intern education on a full time or part time basis may be desirable in hospitals where the members of the staff are unable to devote the necessary time to the careful planning and supervision of the details of the internship program. The director should be a person who has had experience and training that qualify him to plan, with the assistance and cooperation of other members of the intern committee and the staff, a sound program of instruction for the interns. One of his important responsibilities should be to observe closely the operation of the program. He should be vested with sufficient authority to insure that his recommendations are carried out effectively. In cooperation with the chairmen of the several departments and the administration of the hospital he should undertake to integrate the various educational activities of the hospital.

The teaching obligations of individual staff members cannot be delegated to the director of intern education even though it is to be expected that he will take an active part in the teaching program. His function is to organize and supervise a program which will increase the effectiveness of the individual staff member's participation in the teaching program.

X. Nature of the Intern's Duties

Each intern on duty in any clinical department should write or dictate the history, physical examination and his own diagnostic impression of all patients assigned to him. He should have laboratory work assigned to him of such nature as to give him familiarity with clinical laboratory methods and to develop competence in the use of all those which the average physician may be called on to perform. However, the intern should not be overburdened by an excessive amount of routine procedures of limited educational value. The nonoperative treatment of each patient should, in the main, be his responsibility under critical guidance by the attending physician.

The intern's record should be verified by a competent supervising physician, calling attention to errors in observation and adding supplementary notes containing any relevant data which the intern may have omitted. If the intern's record is acceptable, the supervising physician should countersign and thus approve it. The intern should enter frequent progress notes on the record describing the patient's clinical course and make certain that all treatments or special diagnostic studies are correctly recorded. When a patient is discharged, the intern should write a concluding note which summarizes the patient's course in the hospital, describes the patient's condition as he leaves the hospital and states the final diagnosis. This note should be verified by the attending physician.

XI. Teaching Program

1. Bedside Teaching.—The most important phase of intern instruction consists in daily, regularly organized, well conducted teaching at the bedside. By this is meant systematic instruction of the intern by the attending physician with an ample discussion of the history, the clinical and laboratory findings, the diagnosis and the treatment of each patient. The social and psychologic aspects should receive proper emphasis. To conduct such teaching properly is the duty of the attending physician in direct charge of the patients assigned to the intern. It cannot be delegated to others, though it may be supplemented by supervision of the intern's work by the director of intern education, junior staff members or resident physicians. Assignments which have no educational value should be avoided as far as possible.

2. Internal Medicine.—This department should afford each intern an adequate amount of instruction and experience in general medicine including both the organic and functional aspects of disease and in such medical technics as are commonly employed in the practice of internal medicine.

3. Surgery.—Surgical training should be planned to emphasize diagnosis, preoperative and postoperative care of surgical cases, minor surgery and emergency care, rather than skill in operative technic. In the operating room the intern's role in surgery should be that of an assistant rather than that of an operator. The dressing of surgical wounds should be regarded as an important part of his experience, giving him a particularly valuable opportunity to observe carefully the immediate effects of surgical procedures and their treatment. He should obtain instruction and experience in administration of various types of anesthetics under the supervision of a trained anesthesiologist.

4. Obstetrics.—The intern is expected to assist at the delivery of all patients assigned to him and to deliver a minimum of 10 patients under direct supervision. Limited training in obstetrical anesthesia is desirable. Additional experience should be provided in prenatal and postnatal care and in the management of the complications of pregnancy and labor.

5. Pediatrics.—Training in pediatrics, in addition to affording the intern an adequate amount of instruction and experience in the medical, surgical and psychiatric aspects of the diseases of infancy and childhood, should include experience in the care of the newborn and the type of experience obtained in a well baby clinic.

6. Pathology.—The intern should receive experience in clinical laboratory work to increase his understanding of and ability to interpret routine laboratory procedures. He should be required to be familiar with the pathologic studies of surgical specimens and necropsy material which concern his own patients. Except in emergencies no assignment should be permitted to interfere with his attendance at the postmortem examination of any case which has been under his care. Whenever possible, he should assist in the preparation and presentation of the clinical-pathologic conference when cases assigned to him are being reviewed. Interns assigned to the department of pathology should, when possible, assist at necropsies, receiving instruction in technic and in pathologic interpretation.

7. Outpatient Department.—It is desirable that each intern should have satisfactorily supervised experience in outpatient work under circumstances comparable to the office practice of medicine. Whenever possible, outpatient assignments should be closely correlated with corresponding services in the hospital, thus encouraging careful follow-up work and observation of patients over a long period of time.

XII. Miscellaneous

1. Record of Interns' Work.—It is recommended that the hospital keep an adequate record of the interns' activities during his period of service. Such information is helpful to the hospital in evaluating the operation of the internship program and may be requested by state licensing boards, medical schools and other agencies.

2. Rules Regarding Interns.—The hospital should supply each intern with written or printed rules defining his duties and privileges.

3. Interns' Living Quarters.—The hospital should provide for the intern comfortable living quarters, healthful food and suitable recreational opportunities.

4. Interns' Health.—The hospital should be responsible for the interns' health, at least to the extent of providing at the beginning of each intern's service a careful physical examination and laboratory studies, including a roentgenogram of the chest and immunization against communicable diseases. There should be at all times a readily accessible consultation service for interns with some member of the staff definitely assigned to this work. Periodic chest x-rays are desirable at six month intervals during the intern's term of service.

5. Relationship between Hospital and Intern.—To avoid misunderstanding, it is desirable that each intern at the time of his appointment should enter into a formal agreement with the hospital defining mutual obligations. Such agreement should be honorably fulfilled by both parties. A breach of the agreement by either a hospital or an intern is not condoned by the Council. Whenever complaint is made of a breach of agreement it is the policy of the Council to ask each of the parties to submit an explanatory statement. Such statements become a part of the physician's and the hospital's record.

XIII. Admission to the Approved List

1. Application for Approval.—Registration of a hospital by the American Medical Association is a prerequisite to the consideration of a hospital for approval for intern training. Hospitals that desire to be accredited for intern training should apply to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10. For this purpose forms in duplicate will be supplied on request. They should be filled out with care by the superintendent or by some member of the staff who is familiar with the hospital's intern program, and one copy should be returned to the Council.

2. Approval for the training of interns is granted for the current year only and is subject to renewal annually on the basis of current information concerning the educational program. Approval may be withdrawn at any time that a hospital ceases to comply with one or more of the requirements set forth in the Essentials of a Registered Hospital or the Essentials of an Approved Internship. Approval may also be withdrawn from hospitals in which the intern program has not been in operation for a period of two consecutive years.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1913 as a division of the University of Alabama. Located in Birmingham in 1914. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county and city, maintenance of which is paid to the university on a per diem basis by the county. In 1943 the appropriation included $1,000,000 for the building of a new medical school which will be erected as early as possible, and temporary quarters are now in the Jefferson-Hillman Hospital. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October, 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, were absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows: for legal residents of Alabama $100 per academic year plus incidental fees of $20. Nonresidents of the state are charged an additional $225 each session. The registration for the 1948-1949 session was 186; graduates 31. The last session began Sept. 13, 1948, and ended June 7, 1949. The next session for the first and second year classes will start Sept. 16, 1949, and for the third and fourth year classes the session will begin Sept. 6, 1949. All classes will end June 3, 1950. The Dean is Roy R. Kracke, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $380 a year; nonresidents are charged $505 a year. The registration for the 1948-1949 session was 303: graduates 54. The last session began September 27, 1948, and ended June 17, 1949. The next session will begin September 26, 1949, and will end June 16, 1950. The Vice President is Henry Clay Chenault, M.D.; the Acting Dean is William C. Langston, M.D.

CALIFORNIA

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees are $320 per academic year. Nonresidents are charged $250 additional each year. The registration for the 1948-1949 session was 283; graduates 65. The last session began Sept. 13, 1948 and ended June 16, 1949. The next class will begin Sept. 15, 1949 and will end June 15, 1950. The Dean is Francis Scott Smyth, M.D., San Francisco.

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a seven weeks' clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required. The yearly tuitions including fees are respectively, $737.00, $725.50, $741.25 and $748.75. The registration for 1948-1949 was 327; graduates 85. The last session for freshman, sophomore and junior students began on Sept. 12, 1948 and ended June 16, June 23 and June 10, 1949, respectively. The senior session began June 13, 1948 and was completed June 12, 1949. The next session for freshman and sophomore students will begin Sept. 4, 1949, junior students Sept. 11, 1949 and senior students began June 12, 1949 and will end June 9, 1950 for the first three classes and June 11, 1950 for seniors. The President is George T. Harding, M.D., Los Angeles. The deans are Harold Shryock, M.D., Loma Linda, and William F. Norwood, Ph.D., Los Angeles.

Los Angeles

University of Southern California School of Medicine, 3518 University Avenue, Zone 7.—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1899. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are approximately 90 semester hours. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately $600. The registration for 1948-1949 was 262; graduates 60. The last session began September 13, 1948 and ended June 11, 1949. The next session will begin Sept. 12, 1949 and will end June 10, 1950. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the city of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is $699. The registration for 1948-1949 was 242; graduates 59. The last session for all classes began Sept. 27, 1948 and ended June 15, 1949. The next session will begin Sept. 26, 1949 and will end June 14, 1950. The Dean is Loren R. Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are ninety semester hours of collegiate work. The fees average $525 per academic year. Nonresidents are charged $300 additional each year. The registration for 1948-1949 was 251; graduates 58. The last session began Sept. 27, 1948 and ended June 13, 1949. The next session will begin Sept. 26, 1949 and will end June 12, 1950. The Dean is Robert C. Lewis, Ph.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The requirements for admission are three years collegiate work. The fees average $750 per academic year. The registration for 1948-1949 was 231; graduates 47. The last session began Sept. 22, 1948 and ended June 11, 1949. The next session will commence Sept. 21, 1949 and will end June 6, 1950. The Dean is C. N. Hugh Long, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, N. W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $835.00 per academic year. Registration for 1948-1949 was 389; graduates 73. The last session for freshmen and sophomores began September 20, 1948 and ended May 28, 1949; the junior class began August 30, 1948 and ended May 21, 1949 and the senior class began June 1, 1948 and ended June 13, 1949. The next session for freshmen will begin September 12, 1949 and will end May 27, 1950; the sophomores will begin September 19, 1949 and will end May 27, 1950; the juniors will be in session from August 29, 1949 to May 20, 1950; the senior session began June 1, 1949 and will end June 12, 1950. The Dean is Rev. Paul A. McNally, S.J., Ph.D.

George Washington University School of Medicine, 1335 H Street, N. W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. Ninety semester hours of college work are required for admission. The fees average $650 per academic year. The registration for 1948-1949 was 320; graduates 69. The last session began Sept. 20, 1948 and ended June 1, 1949. The next session will begin Sept. 19, 1949 and will end May 31, 1950. The Dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, Fifth and W Streets, N. W., Zone 1.—Chartered in 1867. Organized in 1869. The first class was graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The minimum requirements are two years of collegiate work, but practically the bachelor's degree. The course covers four years of thirty-three weeks each. The fees are, respectively: $397.50; $392.50; $382.50 and $402.50. The registration for 1948-1949 was 275; graduates 66. The last session began Sept. 27, 1948 and ended June 3, 1949. The next session will begin October 3, 1949 and will end June 9, 1950. The Dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years: 36 weeks each in the first and second years; 40 weeks each in the third and fourth years. The fees for each of the four academic years are $600. The registration for 1948-1949 was 233; graduates 39. The last session for freshmen and sophomores began Sept. 23 and 27, 1948 and ended June 3, 1949; the last session for juniors began Sept. 7, 1948 and ended June 3, 1949; the last session for seniors began August 2, 1948 and ended June 3, 1949. The next session for freshmen and sophomores will begin Sept. 1 and 6, 1949 and will end June 2, 1950. The session for junior and senior classes began Aug. 1, 1949 and will end on June 2, 1950 The Dean is R. Hugh Wood, M.D.

Augusta

University of Georgia School of Medicine, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1929. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of collegiate work are required for admission. Fees for 1949-1950, $300 per academic year for residents of Georgia, nonresidents $600. Only bona fide residents of Georgia admitted (with exception of A. S. T. and V-12 Program students during World War II). The registration for the 1948-1949 session was 302; graduates, 68. The next session will begin September 15, 1949 and will end June 5, 1950. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Ave.—Founded in 1912 as the Chicago Hospital College of Medicine. In 1919 the name of the institution was changed to the Chicago Medical School. The school moved from its former location to its present site in the Medical Center in 1930. The Chicago Medical School is a nonsectarian, coeducational institution. It is chartered in the State of Illinois as a nonprofit institution. Three years of collegiate work are required for admission. The yearly tuition fees are, respectively, $655, $860, $825 and $620. The registration for 1948-1949 was 235. The last session for freshmen began Oct. 4, 1948 and for sophomores July 6, 1948 and ended June 18, 1949; the junior and senior session began Oct. 4, 1948 and ended for seniors June 25, 1949. The junior class will end Sept. 24, 1949. The next session for freshmen, juniors and seniors will begin Oct. 3, 1949 and will end June 17, June 17 and June 24, 1950. The sophomore class began July 5, 1949 and will end June 17, 1950. The Dean is John J. Sheinin, M.D.

Northwestern University Medical School, 303 East Chicago Avenue. —Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is 85 semester hours of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. A hospital internship is required for graduation. The total fees are $600 each year. The registration for 1948-1949 was 525; graduates 130. The last sesion began Sept. 24, 1948 and ended June 13, 1949. The next session will begin Sept. 23, 1949 and will end June 10, 1950. The Dean is Richard H. Young, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The fees are $675 a year. The registration for 1948-1949 was 295; graduates 53. The last session for freshmen, sophomores and juniors began Sept. 27, 1948 and ended June 25, 1949; the session for seniors began Sept. 13, 1948 and ended June 4, 1949. The next session will begin Sept. 26, 1949 and will end June 17, 1950 for the first three classes and June 10, 1950 for seniors. The Dean is James J. Smith, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College, which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. An especial function of the school is to train people for making contributions to the advancement of medical science. The requirements for admission are 90 semester hours of collegiate work. The curriculum covers twelve quarters of work. Seventy-two students are admitted to the first year class each year. The tuition fee averages $720. The registration for 1948-1949 was 246; graduates, 55. Quarters begin in March, June, September and December of each year. The Dean of the Division of the Biological Sciences is Lowell T. Coggeshall, M.D. All correspondence relating to general policies should be addressed to A. C. Bachmeyer, M.D., Associate Dean of the Division of Biological Sciences, and that pertaining to student affairs, including admission, to F. J. Mullin, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average $292 per academic year; nonresidents pay an additional fee of $150. The registration for the 1948-1949 session was 653; graduates, 158. The last session began Sept. 27, 1948 and ended June 18, 1949. The next session will begin Sept. 27, 1949 and will end June 17, 1950. The Dean is John B. Youmans, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The B.S. degree in anatomy and physiology is conferred. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $221 for residents of Indiana and $426 for nonresidents. The registration for the 1948-1949 session was 438; graduates 81. The last session began Sept. 20, 1948 and ended June 12, 1949. The next session will begin Sept. 19, 1949 and will end June 11, 1950. The Dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is $230 each year for residents of Iowa and $490 for nonresidents. The registration for 1948-1949 was 299; graduates 58. The last session began Sept. 23, 1948 and ended June 10, 1949. The next session will begin Sept. 22, 1949 and will end on June 10, 1950. The Chairman of the Executive Committee is Robert T. Tidrick, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. The clinical courses are given in Kansas City. At present the first year and one half of the medical course is given on the University campus at Lawrence, Kansas. The class is transferred to the Kansas City, Kansas, campus in the middle of the second year, where the balance of the course is given. Coeducational since 1880. The requirement for admission is three years of collegiate work. The fees are $325 per year; the nonresident fees are $625 per year. The registration for 1948-1949 was 334; graduates 82. The last session began June 14, 1948 and ended June 2, 1949. The 1949 freshman class began June 13 and the sophomore class will begin on September 20 and both will end June 4, 1950. The junior and senior classes began June 6, 1949 and will end May 27, 1950. Three-fourths of each junior and senior class is in school all the time while one-fourth is on vacation each quarter. The Dean is Franklin D. Murphy, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirements for admission. Preference is given applicants with a degree or three college years leading to a degree. Fees are $550 for residents of Louisville and Jefferson County and $650 for nonresidents, per school year. The registration for 1948-1949 was 362; graduates 82. The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. The last session began Sept. 22, 1948 and ended June 11, 1949. The next session begins on Sept. 14, 1949, and will end on June 10, 1950. The Dean is J. Murray Kinsman, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 12.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session began in October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years' collegiate work is required for admission. Total fees, $120 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1948-1949 was 322; graduates 58. The last session began September 7, 1948 and ended June 4, 1949. The next session will begin September 6, 1949 and end June 3, 1950. The Dean is William W. Frye, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average $650 per academic year. The registration for the 1948-1949 session was 499; graduates 114. The last session began on Sept. 1, 1948 and ended on June 1, 1949. The next session will begin Aug. 31, 1949 and will end June 11, 1950. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees averaged $828 per academic year. The registration for 1948-1949 was 293; graduates 73. The last session began on Oct. 4, 1948 and ended June 14, 1949. The next session will begin on Oct. 3, 1949 and will end June 13, 1950. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, Lombard and Greene Streets, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work are required for admission. The tuition fees average $513 for residents of the state; for nonresidents $150 additional. The registration for 1948-1949 was 337; graduates 69. The last session began Sept. 16, 1948 and ended June 4, 1949. The next session will begin Sept. 22, 1949 and will end June 10, 1950. The Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average $800 per year. The registration for 1948-1949 was 237; graduates 52. The last session for freshmen, sophomores and juniors began September 13, 1948 and ended May 28, 1949. The last senior class began June 14, 1948 and ended June 6, 1949. The present senior class began June 13, 1949 and will end June 5, 1950. All other classes will be enrolled September 12, 1949, and the session will end May 27, 1950. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. Two years of collegiate work are required for admission. The fees average $830. The registration for 1948-1949 was 511; graduates 141. The last session began Sept. 27, 1948 and ended on June 23, 1949. The next session will begin Sept. 26, 1949 and will end June 22, 1950. The Dean is George Packer Berry, M.D.

Tufts College Medical School, 136 Harrison Avenue, Zone 11.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrolment is generally limited to residents of the New England states. The course covers four years. Total fees for each of the four years are, respectively, $810, $805, $805, $815. The registration for 1948-1949 was 390; graduates 78. The last session for freshmen, sophomores and juniors began Sept. 22, 1948; for seniors June 14, 1948, and all classes ended June 19, 1949. The present session began for the seniors on June 13, 1949 and for the other classes will begin Sept. 21, 1949 and will end June 11, 1950. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. The entrance requirements are ninety semester hours. The fees average $280 per academic year; for nonresidents $500 a year. The registration for 1948-1949 was 469; graduates 107. The last session began Sept. 20, 1948 and ended June 11, 1949. The next session will begin Sept. 26, 1949 and will end June 17, 1950. The Dean is A. C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1512 St. Antoine Street, Zone 26.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 90 semester hours from an accredited college or university. Until further notice, enrolment is limited to residents of the State of Michigan. The fees average $525 for the school year. The registration for 1948-1949 was 227; graduates 37. The last session began Sept. 20, 1948 and ended June 18, 1949. The next session will begin Sept. 12, 1949 and will end June 15, 1950. The Acting Dean is Gordon H. Scott, Ph.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work or of public health work has been completed. Total fees are $307.95 per academic year for residents and $526.95 for nonresidents. The registration for 1948-1949 was 426; graduates, 124. The last session began Sept. 27, 1948 and ended June 11, 1949. The next session will begin Sept. 26, 1949 and will end July 21, 1950. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The Dean of Medical Sciences is *Harold S. Diehl*, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The completion of three years of college study is the minimum admission requirement, but students presenting meritorious credits in excess of the minimum are accepted by preference. The fees average $710. The registration for 1948-1949 was 431; graduates, 90. The last session began Sept. 14, 1948 and ended June 1, 1949. The next session will begin Sept. 20, 1949 and will end June 1, 1950. The Dean is Melvin A. Casberg, M.D.

Washington University School of Medicine, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The fees average $700. In 1950 the fees will be increased to $800. The registration for 1948-1949 was 351; graduates 96. The last session began on Sept. 13, 1948 and ended June 7, 1949. The next session will begin on Sept. 12, 1949 and will end on June 6, 1950. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 302 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The tuition fees average $700 per academic year. The registration for 1948-1949 was 248; graduates 39. The last session began Sept. 24, 1948 and ended June 2, 1949. The next session will begin Sept. 22, 1949 and will end June 1, 1950. The Dean is Percy J. Carroll, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. The University of Nebraska College of Medicine was established in Lincoln in 1883, and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine, University of Nebraska. The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average $450 per academic year; nonresidents are charged an additional $150. The registration for 1948-1949 was 302; graduates 58. The last session for seniors began Sept. 13, 1948, and ended May 28, 1949. The last session for freshmen, and sophomores and juniors began Sept. 13, 1948 and ended June 4, 1949. The next session will begin Sept. 12, 1949 and will end June 3, 1949. The Dean is Harold C. Lueth, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average $725 per academic year. The registration for 1948-1949 was 186; graduates 41. The last session began for the freshmen and sophomores on Sept. 27, 1948 and ended on June 15, 1949 for the freshmen and on June 11, 1949 for the sophomores; the last session for the juniors began on Sept. 13, 1948 and ended on May 21, 1949, for the seniors June 1, 1948 to May 31, 1949. The present senior class began on June 1, 1949 and will end May 31, 1950. The next session for other classes will begin on Sept. 26, 1949 and will end June 12, 1950. The Dean is R. S. Cunningham, M.D.

Brooklyn

Long Island College of Medicine, 350 Henry Street, Zone 2.—Chartered in 1930, was originally organized in 1858 as the Long Island College Hospital. From the collegiate department the first class graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are $715 per academic year. The registration for 1948-1949 was 416; graduates, 101. The last session for seniors began Sept. 13. 1948 and ended June 4, 1949. The last session for freshmen, sophomores and juniors began on Sept. 20, 1948 and ended on June 11, 1949. The next session begins for freshmen, sophomores and juniors on Sept. 19, 1949 and ends June 10, 1950, for seniors the next session will begin Sept. 12, 1949 and will end June 3, 1950. The President is Jean A. Curran, M.D. The Dean is Duncan W. Clark, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is three years of collegiate work including certain prescribed science subjects. The fees average $628. The registration for 1948-1949 was 259; graduates 49. The last session began on Sept. 20, 1948 and ended June 18, 1949. The next session will begin Sept. 19, 1949 and will end on June 17, 1950 for freshmen and sophomores and on June 3, 1950 for juniors and seniors. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average $800 per academic year. The registration for 1948-1949 was 436; graduates 108. The last session began on June 7, 1948 and June 1, 1948 for juniors and seniors, respectively, and ended on June 1, 1949. The last session for freshmen and sophomores began on Sept. 13, 1948 and ended June 1, 1949. The present session began on June 6, 1949 and June 1, 1949 respectively, for the juniors and seniors and will end June 3, 1950, and will begin on Sept. 12, 1949 for the freshmen and sophomores and will end June 3, 1950. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students admitted are from colleges approved for premedical training. The requirement for admission is three years of college work. The fees average $700 per year. The registration for 1948-1949 was 319; graduates 69. The last session began for senior students July 12, 1948 and ended June 15, 1949. The freshman, sophomore and junior classes began Sept. 15, 1948 and ended June 15, 1949. The next session for seniors began on July 11, and the remaining three classes will begin Sept. 15 and all classes will end June 14, 1950. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street, N. Y. 9.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Three years of college work is the minimum requirement for admission but a degree is preferred. The fees average $740 per academic year. The registration for 1948-1949 was 446; graduates 95. The last session began Sept. 20, 1948 and ended June 8, 1949. The next session will begin Sept. 19, 1949 and will end June 7, 1950. The President and Dean is J. A. W. Hetrick, M.D.

***New York University College of Medicine**, 477 First Avenue*, Zone 16. This is the undergraduate medical college of the New York University-Bellevue Medical Center which comprises also the Post-Graduate Medical School and the University Hospital.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. In 1947 the charter of the University and the statutes were amended, establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. The fees average $650 per academic *session*. The registration for 1948-1949 was 478; graduates 112. The last session began Sept. 20, 1948 and ended May 27, 1949 for freshmen, sophomores and seniors, and June 17, 1949 for juniors. The next session for all classes will begin Sept. 19, 1949, and will end May 20, 1950 for freshmen and sophomores, June 10, 1950 for juniors and May 13, 1950 for seniors. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 7.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $600 per academic year. The registration for 1948-1949 was 268: graduates 68. The last session began Sept. 20, 1948 and ended June 18, 1949. The next session will begin on Sept. 19, 1949 and will end on June 17, 1950. The Dean is George H. Whipple, M.D.

Syracuse

Syracuse University College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1831, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. The fees average $800 per academic year. The registration for 1948-1949 was 191; graduates 46. The last session began Sept. 7, 1948 and ended June 6, 1949. The next session for all classes will begin approximately Sept. 6, 1949 and will end June 5, 1950. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophomore, junior and senior years. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. This accelerated schedule is optional, and students may take the two semesters of their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $750 for three quarters. The registration for 1948-1949 was 277; graduates 59. During 1949 the quarters begin Jan. 3, March 28, July 5, Oct. 3, and end March 19, June 11, Sept. 17 and Dec. 17. The next freshman class will be enrolled Oct. 3, 1949 and will end June 10, 1950. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Ninety semester hours of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray expenses for their education. Tuition is $600 per school year. The registration for 1948-1949 was 186; graduates 38. The last session for the freshman class began Oct. 4, 1948; sophomores Oct. 4, 1948; juniors July 12, 1948, and seniors March 29, 1948; and ended for freshmen, sophomores, and juniors on June 11, 1949; and for seniors Dec. 18, 1948. The present junior and senior classes began July 11, 1949, and will end June 10, 1950. The next freshman and sophomore classes will begin Oct. 3, 1949, and will end June 10, 1950. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Three years of collegiate work are required for admission. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. Tuition is as follows: for legal residents of Cincinnati $525 a year plus breakage fees ($125 additional for those not legal residents). The registration for 1948-1949 was 327; graduates 78. The last session for freshmen, sophomores, juniors and seniors began Sept. 27, 1948 and ended June 4, 1949. The next session for all classes will begin Sept. 26, 1949 and will end June 3, 1950. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission. The fees average $800 per academic year. The registration for 1948-1949 was 325; graduates 75. The last session began Sept. 15, 1948 and ended June 4, 1949. The next session will begin Sept. 21, 1949, for freshmen and sophomores, Sept. 14, 1949, for juniors, and will end June 3, 1950; the senior session will begin Aug. 29, 1949 and will end June 11, 1950. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues, Zone 10.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1831) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average $480 per academic year and $225 additional for nonresidents. The registration for 1948-1949 was 322; graduates 84. The last session began on Sept. 28, 1948 and ended June 10, 1949. The next session will begin Sept. 27, 1949, and end June 9, 1950. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine. 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. The fees for residents of Oklahoma are $350; nonresidents, $700. The registration for 1948-1949 was 259; graduates 54. The last session began Sept. 20, 1948 and ended June 6, 1949. The next session will begin Sept. 19, 1949 and will end June 5, 1950 for the first three classes. The senior session began June 20, 1949 and will end June 5, 1950. The Dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, Marquam Hill, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are, respectively, $388.50, $388.50, $383.50 and $383.50 for residents of Oregon and $150 a year additional for nonresidents. The registration for 1948-1949 was 273; graduates 59. The last session began Sept. 29, 1948 and ended June 17, 1949. The next session will begin Oct. 3, 1949 and will end June 16, 1950. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Incorporated in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869, it and a corporation known from 1853 to 1867 as The Washington Medical College of Philadelphia and thereafter as The Hahnemann Medical College of Philadelphia were merged under the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Three years of collegiate work in an approved college of arts and sciences are required for admission. Fees are respectively $755, $750, $750, $775. The registration for 1948-1949 was 366; graduates 98. The last session began for seniors Sept. 27, 1948 and ended June 24, 1949. The last session for juniors began Sept. 13, 1948 and ended June 24, 1949. The last session for sophomores began Sept. 27, 1948 and ended June 18, 1949. The last session for freshmen began Sept. 20, 1948 and ended June 18, 1949. The next session for all classes will begin Sept. 12, 1949 and will end June 3, 1950 for freshmen and sophomores, June 10, 1950 for juniors, and June 15, 1950 for seniors. The Dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its board of trustees. For the class entering in 1950 the minimum entrance requirement will be three years of college work. The tuition fee is $700 a year. The registration for 1948-1949 was 635; graduates 150. The last session began for freshmen on Sept. 13, 1948 and ended June 13, 1949; for sophomores, juniors and seniors on Sept. 15, 1948 and ended for sophomores and juniors on June 10, 1949, and for seniors on May 27, 1949. Graduation was on June 3, 1949. The next session will begin for all classes on Sept. 12, 1949 and will end on May 27, 1950. Graduation June 9, 1950. The Dean is Wm. Harvey Perkins, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $710 per academic year. The registration for 1948-1949, was 461; graduates 98. The last session began Sept. 20, 1948 and ended June 16, 1949. The next session will begin Sept. 19, 1949 and will end June 15, 1950. The Dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine. Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916, it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work are required for admission. The tuition fee is $700, with a deposit fee of $15, a general fee including student health of $15 and a matriculation fee of $5. The registration for 1948-1949 was 474; graduates 120. The last session began Sept. 27, 1948 and ended June 15, 1949. The next session will begin Sept. 25, 1949 and will end June 14, 1950. The Dean is John McK. Mitchell, M.D.

Woman's Medical College of Pennsylvania, Henry Avenue and Abbottsford Road, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one-half to nine months each. Total fees are $675 yearly. The registration for 1948-1949 was 161; graduates 30. The last session began Sept. 8, 1948 and ended June 16, 1949. The next session will begin Sept. 7, 1949 and will end June 15, 1950. The Dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducation since 1899. Entrance requirements are three years of collegiate work. The total fees are $556 each year. The registration for 1948-1949 was 303; graduates 68. The last session began Sept. 13, 1948 and ended June 8, 1949. The next session will begin on Sept. 12, 1949 and will end June 14, 1950. The Dean is William S. McEllroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average $425 each year for residents of South Carolina and $625 for nonresidents of the state. The registration for 1948-1949 was 216; graduates 42. The last session began on Sept. 23, 1948 and ended June 2, 1949. The next session will begin on Sept. 22, 1949 and will end June 1, 1950. The Dean is Kenneth M. Lynch, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 874 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Two years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science-medical curriculum of the University. The fees are $175 quarterly. For residents of the state the charge is reduced $50 each quarter. The registration for 1948-1949 was 578; graduates 112. During the next academic year the quarters begin September, January, March and July. The Dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Two years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year $505, second year $495, third year $485, fourth year $495. The curriculum covers four academic years of thirty-six weeks each. In Sept. 1942, Meharry Medical College instituted the quarter system. The registration for 1948-1949 was 231; graduates 43. The last session began on Sept. 27, 1948 and ended on June 6, 1949. The next session begins on Sept. 26, 1949 and will end on June 5, 1950. The Director of Medical Education is Murray C. Brown, M.D.; the Dean is Michael J. Bent, M.D.

Vanderbilt University School of Medicine, Twenty-First Avenue South at Edgehill, Zone 4.—This school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years of nearly nine months each. The fees average $615 per academic year. The registration for 1948-1949 was 200; graduates 47. The last session began Sept. 27, 1948 and ended June 5, 1949. The next session will begin Sept. 26, 1949 and will end June 5, 1950. The Dean is Ernest W. Goodpasture, M.D.

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. Became a branch of the University of Texas, Sept. 1, 1949. The medical college is operated on the regular program offering three terms of twelve weeks each per academic year. The tuition fees for residents are $50 per year. The nonresident fee is $300 per year. Ninety semester hours are required for admission. Registration 1948-1949 was 238; graduates 56. The last session began Sept. 8, 1948 and ended June 6, 1949. Next session will begin Sept. 1, 1949 and will end June 5, 1950. The Dean is W. Lee Hart, M.D.

Galveston

University of Texas School of Medicine, 900 Strand St.—Organized in 1890. The first class graduated in 1892. Coeducational since organization. Ninety semester hours are required for admission to the freshman class matriculating in September 1949, but students are urged to complete the baccalaureate degree if possible prior to matriculation. The fees average $113 per academic year, including health fees for medical care and hospitalization. The registration for 1948-1949 was 374. Graduates on June 10, 1949 were 69. The last session began on Sept. 20, 1948 and ended on June 10, 1949. The next freshman class will matriculate on Sept. 19, 1949, and the sophomore, junior, and senior classes will matriculate on Sept. 26, and all classes will end June 9, 1950. The Vice President is Chauncey D. Leake, Ph.D., and D. Bailey Calvin, Ph.D., is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are 90 semester hours of collegiate work. The course covers four years of eight months each. The fees are respectively $556, $546, $531, $556. The registration for 1948-1949 was 306; graduates 62. The last session began Oct. 4, 1948 and ended June 13, 1949. The next session will begin Oct. 3, 1949 and will end June 12, 1950. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1906. Coeducational since organization. Four year curriculum established March 1943. Three years of collegiate work are required for admission. The University of Utah has accepted in principle the policy of acceleration by graduating a class in three calendar years (4 academic years), but will admit only one class annually. The next freshman class will be admitted in June, 1950. All subsequent freshman classes will begin in June of each year. Classes are scheduled during four academic quarters (11-12 wks.) each calendar year. An entering first year student may be graduated in 12 academic quarters (3 calendar years) after date of admission; attendance during the summer quarter being required. Applications for admission (complete) must be submitted 9 months prior to opening date. The fees for each quarter average $151.50 (Resident); there is a non-resident fee of $50.00 each quarter. The registration for 1948-1949 was 194; graduates 67. The last session began for freshmen June 1948 and ended March 1949. The present session for freshmen began June 20, 1949 and will end March 1950. The present session for sophomores began March 1949 and will end Dec. 1949. The present session for juniors began Jan. 1949 and will end Sept. 1949. The present session for seniors will begin Sept. 1949 and end June 1950. The Acting Dean is H. L. Marshall, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park. Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1851 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages $550 per session. Nonresidents are charged an additional $150 each session. A $25 fee is charged for the doctor's degree. Registration for 1948-1949 was 148; graduates 34. The last session for freshmen, sophomores and juniors began Sept. 18, 1948 and ended June 20, 1949. The last senior class began July 3, 1948 and graduated June 20, 1949. The present senior class began July 5, 1949; the next freshman, sophomore and junior classes will begin Sept. 17, 1949 and all classes will end June 12, 1950. The Dean is William Eustis Brown, M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the average tuition fee is $430 per academic year; for nonresidents, $680. The registration for 1948-1949 was 262; graduates 56. The last session began Sept. 14, 1948 and ended June 13, 1949. The next session will begin Sept. 14, 1949 and will end June 12, 1950. The Dean is Vernon W. Lippard, M.D.

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1851. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given to applicants with a baccalaureate degree. Fees average $510 per academic year. Nonresidents are charged an additional $200 each year. The registration for 1948-1949 was 326; graduates 68. The last session began Sept. 13, 1948 for second, third and fourth year classes and ended June 7, 1949. The last session for the first year class began Sept. 9, 1948 and ended June 7, 1949. The subsequent session will begin Sept. 8, 1949 for the first year class and Sept. 12, 1949 for the second, third and fourth year classes and will end June 6, 1950. The Dean is Harvey B. Haag, M.D. The Associate Dean and Chairman of the Admissions Committee is Mr. George W. Bakeman.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. The entrance requirement is three years of collegiate work. Fees for the first, second and third years $310, for the fourth year $220 per academic year for residents. An additional fee of $300 per year is charged nonresidents. Registration for 1948-1949 was 293; graduates 56. The last session for freshman, sophomore and junior students began Sept. 20, 1948 and ended June 17, 1949. The present senior class began June 28, 1948 and ended June 17, 1949. Freshman, sophomore and junior classes will begin Sept. 19, 1949 and will end June 17, 1950. The senior class began June 27, 1949 and will end June 17, 1950. The Dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $650 per academic year. The registration for the 1948-1949 session was 377; graduates 73. The last session began Sept. 27, 1948 and ended June 4, 1949. The last senior class began July 5, 1948 and ended June 12, 1949. The next session for freshman, sophomore, and junior students will begin Sept. 26, 1949 and will end May 27, 1950. The present session for seniors began June 13, 1949 and will end June 10, 1950. The Dean is John S. Hirschboeck, M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. New course—three years premedical, four years of medicine—offered with the session 1947-1948. Tuition for the four years is $400 per session. The registration for 1948-1949 was 180; graduates, 34. The last session began Sept. 7, 1948 and ended June 15, 1949. The next regular session will begin Sept. 6, 1949 and end June 15, 1950. The Dean is John W. Scott, M.D.

Manitoba

University of Manitoba Faculty of Medicine. Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the Universityof Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include three years of collegiate work in the faculty of arts and sciences of a recognized university. The course extends over four years of eight months each and a hospital internship. The fees average $405.75 yearly. The registration for 1948-1949 was 288; graduates 59. The last session began Sept. 8, 1948 and ended May 15, 1949. The next session will begin on Sept. 9, 1949 and will end on May 15, 1950. The Dean is Alvin T. Mathers, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $395.25 yearly; nonresidents $250.00 additional fee. The last session for freshmen, sophomores and juniors began Sept. 14, 1948 and for seniors May 3, 1948; all classes ended May 17, 1949. The registration for 1948-1949 was 215; graduates 43. The next session for all classes will begin Sept. 6, 1949 and will end May 16, 1950. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1852. First class graduated in 1855 and a class graduated each subsequent year. Fees for the first year amount to $342.50 and for each of the other five years $358.50. The course consists of six sessions of 30 teaching weeks, the sixth session being devoted entirely to clinical work in the hospitals affiliated with the University. This latter is not considered an internship. The degrees awarded are M.D., C.M. Freshmen will be admitted annually. Registration for 1948-1949 was 325; graduates 43. The last session began Sept. 27, 1948, and ended May 14, 1949. The next session will begin Sept. 19, 1949, and will end May 13, 1950. The last Convocation was held on June 4, 1949. The Dean is G. Spencer Melvin, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years are $450 a year. The registration for 1948-1949 was 264; graduates 52. The last session began Sept. 13, 1948 and ended May 26, 1949. The next session begins Sept. 12, 1949 and ends May 25, 1950. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The degree of M.D. is conferred after 4 years in the study of medicine. Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto. A certain number are admitted each year to the first medical year who hold Arts degrees from recognized universities and who have covered the necessary work in the humanities and sciences. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1948-1949 in the medical and premedical years was 964; graduates 154. The next session for first and second premedical years will begin on Sept. 21, 1949 and for first, second, third and fourth medical years on Sept. 19, 1949. The session for premedical years will end on April 29, 1950 and for medical years on May 13, 1950. Students will graduate annually in June. The Dean is J. A. MacFarlane, M.B.

Quebec

McGill University Faculty of Medicine, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Four years of collegiate work are required for admission. The total fees for each of the four medical years are $465. The registration for 1948-1949 was 465; graduates 128. The last session began Sept. 8, 1948 and ended June 4, 1949 for the first three classes and April 30 for the senior class. The next session will begin Sept. 7, 1949 and will end June 1, 1950 for the first three classes and April 29, 1950 for the seniors. The Dean is Frederick Smith, M.D.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: First, a B.A. degree (or its equivalent); second, one year premedical in the faculty of pure sciences (or an entrance examination on the premedical subjects). An internship is required for graduation. The fees average $285 yearly for residents and $342 for nonresidents. The registration for 1948-1949 was 482; graduates 83. The last session began Sept. 15, 1948 and ended May 14, 1949. The next session will begin Sept. 14, 1949 and will end May 13, 1950. The Dean is Edmond Dubé, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The fees for each of the medical years average $226 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1948-1949 was 465; graduates 83. The last session began Sept. 15, 1948 and ended June 1, 1949. The next session will begin Sept. 14, 1949 and will end June 1, 1950. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average $410.50 annually. There is a nonresident fee of $200. The school operates on an accelerated program by accepting two freshman classes each session. The registration for 1948-1949 was 111. The last session began Sept. 20, 1948 and ended May 28, 1949. Additional freshman class admitted January 4, 1949 and will complete the year Oct. 29, 1949. The sophomore session began July 6, 1948 and ended March 19, 1949. An additional sophomore session began November 1, 1948 and ended July 9, 1949. The next freshman class will begin Sept. 5, 1949 and will end May 27, 1950. The next sophomore class will begin July 5, 1949 and will end March 11, 1950. The Dean is David S. Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $236.50, for the second $230.50. The registration for 1948-1949 was 87. The last session began Sept. 17, 1948 and ended June 7, 1949. The next session begins Sept. 15, 1949 and will end June 9, 1950. The Dean is Trawick H Stubbs, M.D

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the Trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year. The tuition is $675 for each year. The registration for 1948-1949 was 46. The last session began on Sept. 27, 1948 and ended June 12, 1949. The next session will begin Sept. 18, 1949 and will end June 11, 1950. The Dean is Rolf C. Syvertsen, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. Certificates are awarded on the completion of two years' work in medicine. The fees are $450 per year for residents; for nonresidents an additional fee of $300 per year. The registration for 1948-1949 was 110. The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years. The full program will probably not get under way for two to three years. The last session began Sept. 20, 1948, and ended June 4, 1949. The next session will begin Sept. 19, 1949, and end June 5, 1950. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are $150 each year for resident students and $228 for nonresidents. The registration, academic year 1948-1949, was 58. The last session began Sept. 20, 1948 and ended June 10, 1949. The next session will begin Sept. 19, 1949 and will end June 2, 1950. The Dean is W. F. Potter, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree.: The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The tuition is $309 for first year residents and $324 for second year residents; $519 for first year nonresidents and $544 for second year nonresidents. The registration for 1948-1949 was 56 The last session began Sept. 6, 1948 and ended May 28, 1949. The next session will begin Sept. 5, 1949 and will end May 27, 1950. The Dean is Donald Slaughter, M.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1902. Gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, $258 and $268; nonresidents, $150 additional each year. The registration for 1948-1949 was 56. The last session began Sept. 13, 1948 and ended May 30, 1949. The next session will begin Sept. 19, 1949 and will end June 5, 1950. The Dean is Edward J. Van Liere, M.D.

APPROVED SCHOOL OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Sciences, Saskatoon. Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The fees are $380. The registration for 1948-1949 was 63. The last session for freshmen began Sept. 20, 1948 and ended June 14, 1949. The next session will begin Sept. 20, 1949 and will end June 20, 1950. The Dean is W. S. Lindsay, M.B.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

Examining and certifying boards in nineteen specialties have been approved by the Council on Medical Education and Hospitals of the American Medical Association. The American Board of Ophthalmology, the first of the examining boards in the specialties, was organized in 1917. Four additional boards were organized by 1933. In 1934 the Council formulated minimal standards governing specialty boards. The boards then in existence were subsequently approved as well as boards formed in later years. Three specialty boards were added to the group in 1949, when the American Board of Preventive Medicine and Public Health, the American Board of Proctology and the Board of Thoracic Surgery were approved. The Board of Thoracic Surgery has been approved as a subsidiary board of the American Board of Surgery. The accompanying table gives the date of activation of each board. The boards in pathology, psychiatry and neurology and radiology confer certificates in special divisions of their specialty as follows:

> Candidates who have met all the general requirements of the American Board of Pathology and who have successfully passed the examination in pathologic anatomy and clinical pathology may apply for special designation of the subspecialty of pathologic anatomy or clinical pathology. In addition, after an accepted candidate has successfully passed a prescribed examination, the board will issue a certificate reading "Pathologic Anatomy (Neuropathology)" or "Clinical Pathology (Clinical Bacteriology)."
>
> Under certain conditions candidates may apply for certification in a special field only, such as "Neuropathology" and "Clinical Bacteriology." This procedure has been in effect since July 1, 1948.
>
> The American Board of Psychiatry and Neurology confers separate certificates in psychiatry and in neurology and two certificates or a combined certificate for those qualified in both fields.
>
> Certificates of the American Board of Radiology are issued on one of two forms as follows: (1) a certificate to the effect that the applicant is qualified to practice radiology in all its branches and (2) a certificate to the effect that the applicant is qualified to practice radiology in one or more of the following special fields: (*a*) roentgenology, (*b*) diagnostic roentgenology and (*c*) therapeutic radiology.

Since the publication of the last Educational Number in 1948, the American Board of Physical Medicine has broadened its functions to include the field of rehabilitation, and the board is now known as the American Board of Physical Medicine and Rehabilitation.

Three boards have certified candidates in subspecialties. The American Board of Internal Medicine certifies in allergy, cardiovascular disease, gastroenterology and pulmonary diseases. The American Board of Pediatrics certifies in allergy. Until the formation of an independent board in proctology in 1949, the American Board of Surgery certified candidates in this field as a subspecialty. Regular board certification is a prerequisite for certification in the subspecialty. The certifying of specialists in subspecialties by these boards is also approved by the Council.

In addition to certifying specialists in otolaryngology, the American Board of Otolaryngology issues a limited certificate in endoscopy to an exceptionally qualified person. Two such certificates have been awarded to date.

Each of the American Boards has published a booklet containing a list of its officers and a brief statement of its organization, purposes and qualifications for eligibility for certification. The current data pertaining

Table 24.—*Approved Examining Boards in Medical Specialties*

Key No.	Name of Board	Year of Activation	Total Certificates Awarded to March 1, 1948	Total Certificates Awarded to July 1, 1949
1	American Board of Pediatrics	1933	2,749	3,007
2	American Board of Psychiatry and Neurology	1934	2,819	3,242
3	American Board of Orthopaedic Surgery	1934	1,214	1,352
4	American Board of Dermatology and Syphilology	1932	972	1,119
5	American Board of Radiology	1934	2,622	3,027
6	American Board of Urology	1935	1,245	1,345
7	American Board of Obstetrics and Gynecology	1930	2,405	2,875
8	American Board of Internal Medicine	1936	5,008	5,837
9	American Board of Pathology	1936	1,462	1,649
10	American Board of Ophthalmology	1917	2,657	2,890
11	American Board of Otolaryngology	1924	4,085	4,262
12	American Board of Surgery	1937	3,272	3,839
13	American Board of Anesthesiology	1937	417	524
14	American Board of Plastic Surgery	1937	175	200
15	American Board of Neurological Surgery	1940	228	303
16	American Board of Physical Medicine and Rehabilitation	1947	86	140
17	American Board of Preventive Medicine and Public Health	1948	.....	277
18	American Board of Proctology	1949	.....	.....
19	Board of Thoracic Surgery (Subsidiary Board of the American Board of Surgery)	1948	.....	174*
	Totals		31,416	35,888
	Certification in Subspecialties			
	By the American Board of Internal Medicine			
	Allergy		106	124
	Cardiovascular Disease		382	420
	Gastroenterology		208	230
	Pulmonary Disease		174	185
	By the American Board of Pediatrics			
	Allergy		32	42
	By the American Board of Surgery			
	Proctology		80	81
	Totals		982	1,082
	Special Certification			
	By the American Board of Otolaryngology			
	Endoscopy		2	2
	By the American Board of Pathology			
	Pathologic Anatomy		**	**
	Clinical Pathology			
	Pathologic Anatomy and Clinical Pathology			
	By the American Board of Psychiatry and Neurology			
	Psychiatry		1,770	2,143
	Neurology		162	209
	Psychiatry and Neurology		887	890
	By the American Board of Radiology			
	Radiology		**	287
	Roentgenology			56
	Diagnostic Roentgenology			58
	Therapeutic Radiology			4
	Totals		2,821	3,649

* Included in totals for American Board of Surgery.
** Figures not available.

to each board and their officers is reproduced in the following pages.

A list of the approved specialty boards, the year of their activation and the number of certificates awarded prior to March 1, 1948, and the number certified to July 1, 1949, respectively, appear in table 24. Figures are also given in these two groups showing the numbers certified in the subspecialties and finally the available figures pertaining to special certification by the boards of otolaryngology, psychiatry and neurology, and radiology.

On March 1, 1948, there were 31,416 physicians certified by the sixteen boards in operation at that time; 4,472 physicians were certified from March 1, 1948 to July 1, 1949. Included in this figure are the 277 physicians certified by the American Board of Preventive Medicine since its activation early in 1949. The 174 Founder Member certificates issued by the Board of Thoracic Surgery are included in the figures for the American Board of Surgery. The first examination for certification in thoracic surgery was given on Aug. 1, 1949. The first examination of the American Board of Proctology will be given in November 1949. No certificates have as yet been issued by this board. Up to July 1, 1949, a total of 35,888 physicians had been certified by eighteen boards.

Table 25.—*Annual Specialty Board Certifications 1940-1949*

Year (Ended March)	Number of Boards in Existence	Number Certified	Accumulated Totals
1940	14	.....	15,853
1941	15	2,085	17,938
1942	15	1,756	19,694
1943	15	2,172	21,866
1944	15	1,578	23,444
1945	15	1,308	24,752
1946	15	1,320	26,072
1947	15	2,424	28,496
1948	16	3,002	31,416
1949 (July 1)	19*	4,472	35,888

* One board, the American Board of Proctology, did not certify any candidates during this period.

On March 1, 1948, 982 certificates in subspecialties were awarded and an additional 100 by July 1, 1949, bringing the total in the subspecialties to 1,082.

Table 25 gives the annual number of specialists certified for the past ten years by all boards and the accumulated totals. The largest number (4,472) obtained certificates in the period from March 1, 1948 to July 1, 1949. The figures represent the total number of certificates issued and do not represent the number of living specialists.

The fourth edition of the "Directory of Medical Specialists" compiled by the Advisory Board for Medical Specialists, published in 1949, includes biographic data pertaining to the educational background of each of the living specialists, including those retired from practice, certified by an American Board.

The current list of residencies and fellowships in the specialties approved by the Council and acceptable to the American boards in fulfilment of their clinical training requirements was published in the May 14, 1949, issue of The Journal.[1] Additions to this list and a revised list of approved residencies in general surgery appear on pages 48 to 51 of this issue.

AMERICAN BOARD OF ANESTHESIOLOGY, INC.

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QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General.*—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must have been limited to anesthesiology for five calendar years, of which at least two must have been devoted to special training.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as anesthetists over a period of years, but whose formal training does not comply with the full requirements.

B. *Professional Standing.*—1. An applicant must be a graduate of a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or a diplomate of the National Board of Medical Examiners.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate training in anesthesiology.

C. *Special Training and Practice.*—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than five calendar years (including period of training).

2. The board requires the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

EXAMINATIONS

The qualifying examination will be divided into Part I, written; Part II, oral, and Part III, practical.

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[1] J. A. M. A. **140**: 173 (May 14) 1949.

PART I

1. An applicant to be eligible for Part I must meet all supervised training requirements, and his credentials must be approved by the board.

2. Part I may be given simultaneously in several places, which the board may deem suitable for the purpose, on the third Friday of each January.[1]

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I and must be a member of the American Medical Association.

2. Part II examinations will be held during the third week in October at a place announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Later, however, as the demand grows, it may be necessary to establish additional dates when this part may be held.[2]

PART III

1. The examiners will observe the work of the candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

Conduct of Examination.—Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology and, on the other hand, to prevent laxity, which would nullify the main purpose of the certification. Thus the type of examination will depend on a careful review of the work done, years of practice, special courses of study and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics and clinical practice in relation to anesthesiology.

Oral examinations will cover topics in the foregoing list, especially as to their clinical application.

Practical demonstrations will be required of the management of the candidate's clinical practice in his local surroundings. This may include inspection of clinical records, records of departmental activities, library facilities and available apparatus, and demonstrations of application of anesthetic agents, methods and technics included in anesthesiology.

Grades.—A candidate must receive a passing average for each part to be entitled to certification.

A candidate who fails in his examination in Parts I, II or III may be permitted reexamination at yearly intervals for two (2) consecutive examinations in that part without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

Applicants who fail to exercise the examination privilege within three (3) years of the date of becoming eligible for examination are required to file a new application and pay a new application fee.

Fee.—The fee shall be $100. At least $25 shall be paid on filing the application (of which sum $15 will be returned if the candidate is not accepted for examination) and the remainder shall be paid before taking the examinations.

This board is a nonprofit organization. All fees are to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

Additional Information.—Every candidate applying for certification must personally appear before the board before being certified.

Application must be made on special blanks to be procured only on written request by the applicant from the secretary of the American Board of Anesthesiology. They must be completely and accurately filled out, accompanied by the other required credentials and filed with the secretary after one year of supervised instruction and at least three months prior to the date of examination.

The secretary cannot make any eligibility rulings. These are made only by the entire board on recommendation of the appropriate committees after reviewing the candidate's formal application. Applications cannot be considered for classification and action by these committees unless accompanied by an application fee of $25, $10 of which is not returnable.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

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BEDFORD SHELMIRE, Dallas, Texas.
FRED D. WEIDMAN, Philadelphia.

REQUIREMENTS FOR ELIGIBILITY FOR EXAMINATION

I. GENERAL REQUIREMENTS

1. High ethical and professional standing.

2. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. The credentials of graduates of foreign schools must be approved by the National Board of Medical Examiners.

3. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

4. A license to practice medicine issued by endorsement of the certificate of the National Board of Medical Examiners or following examination.

5. Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association.

6. Citizenship in the United States or citizenship—meaning native citizens—in Canada or Cuba.

II. SPECIAL REQUIREMENTS

Applicants for certification of the Board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the Board. This classification was abolished Jan. 1, 1949.

Group B consists of physicians who have completed an approved three year period of training.

In accordance with the program recommended to the various specialty boards by the Advisory Board for Medical Specialties the following minimum requirements of special training for admission to examination have been established:

A period of study, after the internship, of not less than three years. This training may be obtained as resident, fellow or graduate student in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology. This period of specialized training shall include:

(*a*) At least one calendar year in an institution approved for three year training (less one month for vacation).

(*b*) Graduate training in the basic medical sciences which are necessary for the proper understanding and treatment of the diseases involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and materia medica, and physics of physical therapy.

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[1] If there are sufficient applicants written examinations may be held on the third Friday of July annually.

[2] Oral examinations may be held during the third week of April annually.

(c) Carefully supervised clinical and laboratory experience in the specialty.

(d) Annual examinations in the clinical, laboratory and public health aspects of dermatology and syphilology.

PRECEPTORSHIP TRAINING

Candidates may spend one year of their training in the office of a diplomate of the board, who has also been approved as a preceptor by the board. The office training may be divided over two years, with one-half day spent in the office of the preceptor and the other half day in an approved institution. Preceptorship training may be taken during any of the years of training. Time spent with an instructor who has not been approved by the board may count only as experience and not as training. A list of approved preceptors is available in the office of the secretary.

The board assumes the responsibility of determining the standards of knowledge to be acquired, but on the candidate rests the responsibility of acquiring the knowledge to fill these standards.

PRELIMINARY REGISTRATION, APPLICATION AND FEE

All students beginning their graduate training should file a preliminary registration form with the secretary.

In order that the committee on requirements may appraise carefully the qualifications of candidates, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. Applications should be filed early in order to obtain full advantage of the sets of histopathologic slides which are available through the Army Medical Museum in Washington. The completed application blank should be sent, at least two months before the date of examination, to the secretary of the board together with the required reprints, photographs and a registration fee of $25, which will not be refunded under any circumstances. No application will be considered until this fee is received. An examination fee of $75 is payable when the candidate is notified that his application is acceptable to the board. The fee of $100 has been carefully computed and is used entirely for administrative purposes. Examiners for the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in Group B will be required to pass a written examination. This written examination on clinical, basic science and laboratory subjects will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination. Candidates must pass the written examination before being admitted to the oral examination.

Applicants classified either in Group A or in Group B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward, where individual cases will be discussed with each candidate, as well as various subjects related to the skin such as histopathology, mycology, allergy and physics of physical therapy. The board reserves the right to add to this list other subjects within the field of dermatology and syphilology.

A candidate for a certificate may take both the written and oral examinations at the next regular examination of the board after he has completed three full years of training in the specialty; this provision does not affect the regulations about the issuance of the certificate. (See Certificates.)

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will try especially to ascertain the breadth of his knowledge in the basic, as well as the clinical aspects of cutaneous medicine, to test his familiarity with the recent literature of dermatology and syphilology and to ascertain his general qualifications as a specialist in this branch of medicine.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instructions for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

The oral examination may be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the Board.

REEXAMINATIONS

If the candidate fails or is conditioned in an examination he will be admitted to a second examination after one year, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $75 before reexamination.

A candidate who has failed twice must file a new application and pay an additional fee of $75.

CERTIFICATES

A certificate will not be issued until the candidate has completed at least five years of dermatologic training and experience. The granting of this certificate by the board indicates that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify as specialists those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada and in Cuba.

AMERICAN BOARD OF INTERNAL MEDICINE

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REQUIREMENTS FOR ADMISSION TO EXAMINATION AND CERTIFICATION

Each applicant for certification by this board must satisfy the qualifications listed below: (I) General Qualifications A, B, C, D; (II) Professional Qualifications A, B, C, D. For exceptions to the requirements C and D under Professional Qualifications see paragraph G.

I. General Qualifications

A. All candidates must be citizens of the United States or Canada.

B. All candidates must present evidence of satisfactory moral and ethical standing in the medical profession.

C. All candidates must be active members in good standing in their county and state medical societies in their state of legal residence. Under unusual and exceptional circumstances the board reserves the privilege of modifying this requirement. (This ruling shall not apply to commissioned officers of the United States regular Army or Navy or United States Public Health Service who are otherwise members of the American Medical Association.)

D. Canadian citizens must be active members of the Canadian Medical Association before admission to examination.

II. Professional Qualifications

A. Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association at the date of graduation.

B. Satisfactory completion of an approved internship of not less than twelve months.[1]

C. Approved residency or fellowship training in internal medicine according to the following plan (Plan A) or one of the alternate plans described under paragraph D.

Plan A: A residency or fellowship in internal medicine for a period of not less than three years in a hospital or other institution approved by the Council on Medical Education and Hospitals of the American Medical Association for residency or fellowship in internal medicine. In addition, two years of practice of clinical internal medicine will be required. The board will accept the following equivalents as satisfying one year only of the three years of residency or fellowship to which this paragraph refers. (Two years must be in the field of general internal medicine.)

1. A second year (or a part thereof) of approved internship in a hospital approved for resident training in internal medicine if limited to the medical service (or medical specialties noted under 2) and if recognized as being the equivalent of an assistant residency by the Medical Director of the hospital and the Chief of the Medical Service. Verification must accompany application.
2. One year of approved residency in one of the medical specialties: allergy, cardiovascular disease, gastroenterology, hematology, pulmonary diseases, neurology, pediatrics and psychiatry.
3. One year of approved residency in pathology.
4. One year as a graduate student or as an instructor in an approved medical school on a full time basis in bacteriology, biochemistry, pathology, pharmacology, physiology or internal medicine.
5. An advanced degree in the fundamental sciences.

Note.—Graduate training credit for the time involved will be allowed candidates who take and satisfactorily complete postgraduate courses in internal medicine or the basic medical sciences provided by accredited medical schools on a full time basis. This ruling shall not apply to courses of less than three months' or more than twelve months' duration. A certificate of creditable performance, based in part, at least, on a formal examination on completion of the course, will be required.

D. Alternate Training Plans: The board firmly believes that the plan of intensive training prescribed herein offers the best opportunity for a young physician to prepare himself to meet his responsibilities as a specialist in internal medicine. It is recognized, however, that capable individuals may accomplish the same result in a longer period of time during which the training is less intensive. The board realizes that a number of medical graduates cannot follow the shorter and more desirable plan either because suitable residencies are not available or, in some instances, because of personal and economic reasons. Accordingly the board has modified its previous regulations governing eligibility for admission to examination. In doing so the board has not modified its standards of examination. It has liberalized its eligibility requirements for admission to examination by accepting half time formal training and the practice of internal medicine under favorable circumstances as to professional and hospital contacts, in lieu of part of the full time requirements. It is hoped that by this means exceptional individuals may acquire a knowledge of medicine and experience in its application sufficient to qualify for examination.

The program already described (Plan A), which consists of three years of formal training in an approved residency or its equivalent, following internship, and two additional years in the practice of internal medicine, is recommended by the board. Variations in this program are now subject to the following regulations.

1. In all instances, one year of approved internship and one year of approved residency will be required, except as indicated under Plan G. The graduate training credit of one year heretofore granted as a result of active duty as a commissioned officer in the armed forces during the period beginning Dec. 7, 1941 and ending Jan. 1, 1947 may not be applied in satisfaction of the one year of approved residency referred to in Plan D, E or F unless the candidate's assignment is considered by the board to have been equivalent to an approved residency.

2. Following one year of internship and two years of approved residency,[2] the remaining requirements may be satisfied by: Plan B; that is, by two years of half time formal training followed by two years of practice limited to internal medicine, or by Plan C; that is, by five years of practice limited to internal medicine.

3. Following one year internship and one year of approved residency, the remaining requirements may be satisfied by:

Plan D[3]; that is, by four years of half time formal training followed by two years of practice limited to internal medicine; or by:

Plan E[3]; that is, by two years of half time formal training followed by five years of practice limited to internal medicine, or by:

Plan F; that is, by eight years of practice limited to internal medicine.

4. In every instance at least two years of practice in internal medicine must be included, but in instances in which four years of practice are substituted for one year of residency, only one additional year of practice will be required; when more than eight years of practice are substituted for two years of residency an additional year of practice will not be required.

5. Physicians who have practiced internal medicine for twelve years following an approved internship may qualify for the examinations without further training (Plan G).

Half time formal training under expanded plans B, D and E is defined as follows:

1. Half-time[3] as an instructor in clinical medicine in a recognized medical school in the United States or Canada.
2. Half-time[3] in a research fellowship sponsored by a recognized medical school in the United States or Canada.
3. Half-time[3] as a graduate student in an approved graduate medical school in the United States or Canada.

E. Practice Requirements: A period of not less than two years of practice in the general field of clinical internal medicine or in the more specialized branches of medicine. (See exceptions, paragraph 4.) This requirement may be satisfied by independent practice or in association with a recognized internist.

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[1] During the period in which the 9-9-9 program was in effect an approved internship of nine months will satisfy the requirement of twelve months. A residency of nine months is considered as nine months only.

[2] For the second year of approved residency one of the equivalents described under C may be substituted.

[3] Half time formal training is regarded as four hours per day for six days per week. It is required that half time formal training be verified by the head of the department. Verification must accompany application.

NOTE: Although in general the board believes it desirable to complete the three years of formal training before satisfying the requirements of practice, a reversal of this order is acceptable.

F. Graduates of Foreign Schools: At the present time neither the Council on Medical Education and Hospitals of the American Medical Association nor any other educational agency in the United States has the machinery to evaluate adequately the quality of foreign medical education. This board must, therefore, evaluate the fundamental educational credentials and other *qualifications of each individual candidate educated abroad* who applies for admission to examination. (Requirements for graduates of foreign schools may be obtained on request to the board—One West Main Street, Madison 3, Wis.).

G. Candidates Graduating Prior to 1937: The requirement of three years of graduate training will not apply to candidates graduating from approved medical schools in the United States and Canada in 1936 or previous thereto, provided such candidates have limited their work to the field of internal medicine for at least two years, and provided each candidate is recognized as an internist by his colleagues in his community.

H. "Preceptor Training": Preceptor type training is not recognized in satisfaction of any part of the three year requirement of formal graduate training.

I. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947. Commissioned officers serving less than one year prior to Jan. 1, 1947 may apply that interval as graduate training, or in partial satisfaction of the requirements of practice.

Service credit, either graduate training or practice, beyond one year requires individual evaluation by the Credentials Committee. If a candidate believes that his service prior to Jan. 1, 1947 merits more than one year of graduate training credit or practice credit he should request Form S-11. This application requires the full names and present addresses of former chiefs of service.

PRINCIPLES OF TRAINING

The American Board of Internal Medicine is interested in the fact that the candidate has embarked on a career of study voluntarily and has thereby expressed the desire to excel and to participate personally in the world's progress in medicine.

Preparation must be based on years of continuous thoughtful study. Therefore, in suggesting a program for those who wish advice, the board hopes to assist the candidates to avoid inferior and superficial programs which may lead to failure and disappointment in later years.

The board believes that all internists should have a sound fundamental knowledge of anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology. Such knowledge is essential to the continued progress of any internist. The board anticipates that adequate training will be obtained in the basic sciences as applied to internal medicine during a formal three year residency program.

The board wishes to emphasize that time and training are but a means to the end of acquiring a broad knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge rests with the candidate. The responsibility of maintaining the standards of knowledge required for certification rests with the board.

APPLICATION

Candidates for examination must make their application on a prescribed form, which may be obtained from the office of the Assistant Secretary-Treasurer.

The application must contain a record of the candidate's premedical and medical training as well as of internships, residencies, graduate study, hospital or dispensary staff appointments, teaching positions, service in the armed forces, membership in medical societies, medical papers published and the names of four well known internists to whom the board may write for professional and character reference.

The application must be accompanied by one recently signed photograph of the candidate mounted on the application, and the registration and examination fee of $40, which fee will cover both the written and oral examinations. An additional fee of $10 will be required when the certificate is issued.

The requirements of graduate training and two years of practice in the field of internal medicine must be satisfactory before a candidate is eligible to apply for admission.

METHOD OF EXAMINATION—WRITTEN AND ORAL

The examinations for certification by the board comprise two parts: Part I is written; Part II is clinical and is an oral examination. The written examination is held simultaneously in different sections of the United States and Canada. Effective Jan. 1, 1949, one written examination will be given each year. This examination will be held on the third Monday in October. This examination is divided into a morning and afternoon period, for each of which three hours are allowed. The questions are of the multiple choice type, framed in such a manner as the board elects and designed to test the applicant's knowledge of applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine, and his basic clinical acumen.

Candidates must pass the written examination before admission to the oral examination will be authorized. The oral examination is conducted under the direct supervision of the board. It is held near the time and place of the annual meetings of the American Medical Association and the American College of Physicians. The examination is conducted at the bedside of the patient. Each candidate is assigned two or more patients and is expected to be sufficiently familiar with whatever problems present themselves to satisfy the board of his clinical expertness.

Normally only two oral examinations are given each year. The board may, however, schedule special oral examinations if necessary. Announcement of all examinations will appear in the *Annals of Internal Medicine* and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Applications cannot be accepted until the schedule is announced in the publication referred to.

REEXAMINATION—WRITTEN AND ORAL

1. Effective July 1, 1949, the board will waive the restrictions on the number of written examinations authorized, provided the candidate has satisfied the requirements hereinafter set forth in paragraph 4. The board may at its discretion deny reexamination in individual cases. The interval between the first and second written examinations will be one year. The interval between all subsequent written examinataions will be two years. A longer period may be required by the board. A fee of $10.00 is required for each additional written examination.

2. Effective July 1, 1949, the board will waive restrictions on the number of oral examinations authorized, provided the candidate has satisfied the requirements hereinafter set forth in paragraph 4. The board may at its discretion deny reexamination in individual cases. The interval between the first and second oral examinations will be one year. The interval between the second and third oral examinations will be not less than two years. The interval between all subsequent oral examinations will not be less than three years. A longer period may be required by the board. A fee of $20.00 is required for each additional oral examination.

3. This ruling does not make it mandatory for a candidate to repeat the examination within the specified time limit. Candidates may elect a longer interval in the case of both the written and oral examinations.

4. When applying for reexamination, a candidate who has been unsuccessful in three written or three oral examinations will be required to present evidence that he has completed additional graduate training of at least three months in internal medicine in an approved medical school, on a full time basis, or its equivalent in approved resident or fellowship training since the last examination. In individual cases the board may require a longer course. Short courses of less than three months may not be applied in satisfaction of this requirement. A new application for admission is required.

The provisions of this section shall be effective retroactively. Any candidate previously disqualified from further examination on the basis of having been unsuccessful in three examinations, either written or oral, may now apply for reexamination subject to the provisions of paragraphs 1 through 4 of this section.

CANCELLATIONS

Effective July 1, 1949, any candidate who cancels his assignment for a written or an oral examination after the official cards of admission have been mailed, will be required to pay a special fee in the amount of $10.00 before a subsequent examination, unless his cancellation was due to a cause deemed adequate by the board to exempt him from such special fee. The mailing date of the cards of admission will be approximately one month previous to the date of examination. This provision becomes necessary because of the large number of cancellations after complete arrangements have been made, and the expense incident thereto.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board and shall bear the official seal of the board.

Certificates of the board will be issued to candidates who have satisfactorily completed the written and oral examinations and have been found qualified by the board to practice the specialty of internal medicine. Specialty certification will be designated on the certificate, for those so certified.

SUBSPECIALTY BOARDS

Allergy, cardiovascular disease, gastroenterology and pulmonary diseases are recognized specialties.

Each subspecialty application is individually considered and acted on by the subspecialty board concerned. The candidate is not eligible for examination until his application has been approved by the subspecialty board concerned and confirmed by this board.

All candidates must pass the written and oral examinations in internal medicine before admission to examination in a specialty of medicine referred to. The specialty examinations are oral only and may be taken the day following the examination at any regularly scheduled oral examination subsequent to the candidate's certification in general medicine. Announcements of the oral examination will appear in The Journal of the American Medical Association and the *Annals of Internal Medicine.*

Application forms will be forwarded on request to the office of the Assistant Secretary-Treasurer and should be returned to his office when completed.

AMERICAN BOARD OF NEUROLOGICAL SURGERY, INC.

Winchell McK. Craig, Chairman, Rochester, Minn.
Joseph P. Evans, Vice Chairman, Cincinnati.
William J. German, Secretary-Treasurer, 789 Howard Avenue, New Haven 4, Conn.
A. W. Adson, Rochester, Minn.
C. C. Coleman, Richmond, Va.
Leo M. Davidoff, New York.
Francis C. Grant, Philadelphia.
Howard C. Naffziger, San Francisco.
Eric Oldberg, Chicago.
Bronson S. Ray, New York.
R. Glen Spurling, Louisville, Ky.
Harry Wilkins, Oklahoma City.

Eligibility for Examination: To be eligible for examination and certification by the board, all candidates must possess the preliminary and basic medical qualifications required by the Advisory Board for Medical Specialties as applied to all specialties as follows:

A. General Qualifications

1. Moral and ethical standing in the profession satisfactory to the Board of Directors.

2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

3. Those who limit their surgical activities to the practice of neurological surgery.

4. It shall be discretionary with the board to accept for examination candidates who have been in practice more than six years but whose formal training fails to meet the full requirements.

5. Properly qualified candidates who are permanent residents in and citizens of other countries and are legally qualified to practice medicine there, and who have received their training in neurological surgery in the United States of America or Canada may apply for certification by the American Board of Neurological Surgery.

B. Professional Standing

1. Graduation from a medical school of the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.

2. Completion of a surgical internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the Board.

C. Special Training

A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons.

This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to practice of neurological surgery will be required in the examination.

An additional period of not less than two years in the practice of neurological surgery.

APPLICATIONS

An application on the official application blank in such form as may be adopted from time to time by the Board of Directors, in order to be considered at any meeting, must be in the hands of the secretary-treasurer of the board not less than sixty days before the date of such meeting.

The secretary-treasurer of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary-treasurer may deem desirable, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary-treasurer its recommendation whether or not the applicant is acceptable. The certification of a candidate shall be approved by a majority of the members of the entire board at any meeting held for such certification.

PAYMENT OF FEES

The fee for certification, with or without examination, shall be seventy-five dollars ($75).

The candidate for examination on filing his application shall accompany it with an application fee of twenty-five dollars ($25). When notified by the secretary-treasurer that he is eligible for examination he shall send the examination fee of fifty dollars ($50) to the Secretary-Treasurer at least two weeks before the date of the examination. The application fee will be returned if the candidate is not accepted for examination.

REEXAMINATION

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of ten dollars ($10). A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

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JOSEPH L. BAER, Vice President, Chicago.
WILLARD R. COOKE, Vice President, Galveston, Texas.
PAUL TITUS, Secretary-Treasurer, 1015 Highland Building, Pittsburgh 6.
ROBERT L. FAULKNER, Assistant Secretary, Cleveland.
F. BAYARD CARTER, Durham, North Carolina.
DANIEL G. MORTON, San Francisco.
ROBERT A. KIMBROUGH JR., Philadelphia.
LAWRENCE M. RANDALL, Rochester, Minn.

PREREQUISITES TO ELIGIBILITY

Each applicant before he may become eligible to receive the certificate of the board or other evidence of recognition:

1. Must have had conferred on him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

2. Must establish in a manner satisfactory to the Board of Directors that he is a physician duly licensed to practice medicine, and

(*a*) that he is of high ethical and professional standing.

(*b*) that he has received adequate training in both obstetrics and gynecology as a specialty. Training in one branch only is not acceptable. The term "adequate training" as used here shall be construed as meaning at least six months and preferably a year full time, in the branch of either obstetrics or gynecology relegated to a minor role in a candidate's training and preference for practice.

3. Must make application for investigation of his credentials and a survey of his character.

4. Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, except for military duties, having limited for at least six months before making application. Effective Dec. 31, 1949, candidates will not be accepted who have not been in practice limited to the specialty for a minimum period of at least two years following completion of their specialty training.

5. Must have membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

This board will not accept applicants for examination who are not full citizens of the United States or of Canada, though they be residents of either country. Foreign born applicants must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure. Notarized statements, not original citizenship papers, must be furnished when the application is filed attesting to the fact of full citizenship in the United States or Canada, if the applicant is foreign born. Further, there will be required a probationary period of at least three years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination.

The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology, except by special ruling when this is related to active military duty.

This board deprecates engagement in fields of practice other than that in which candidates profess to be specialists. The board does not exclude from examination, however, obstetricians-gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities.

Military service or any other similar patriotic service, such as work with Selective Service boards, have not been construed as nonlimitation of practice in violation of the board regulations.

REQUIREMENTS

The requirements for all candidates will be uniform as follows:

1. Completion of at least one year intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. This need not be a general rotating internship, although this latter is preferred.

The board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation.

A second year general internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.

2. A minimum of seven years of practice after the intern year, including at least three years of residency training in approved institutions, or adequate preceptorship training and including at least six months' post-training practice limited to the specialty. Effective Dec. 31, 1949, this latter requirement shall be increased to two years, at least, of post-training practice limited to the specialty. Post-training practice period may include full time medical school or other positions within the specialty, actual practice within the specialty as an assistant, associate, or independently. Details regarding allowances for time in practice when the applicant offers a preceptorship as part or all of his training must be decided individually for each case by the Credentials Committee.

3. The period of special training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics and wound healing.

4. No formal graduate courses are required. If taken, credit will be limited to six months.

PRECEPTORSHIPS

As a substitute for special residency training, service with a qualified obstetrician-gynecologist preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the Credentials Committee after the application is submitted in the regular manner. The time allowance for this type of training will vary with the amount of work done with the preceptor. It is unusual for more than six months' credit to be given for one year of preceptorship training.

An acceptable preceptor is a specialist in obstetrics and gynecology of long experience, preferably certified by this board. His volume of office and hospital practice must be large enough to offer ample opportunity for the candidate's training. Preceptor training should include participation in procedures of office and hospital practice, including operative and obstetric responsibilities, with adequate time devoted to the studies of basic sciences and pathology and the study of current literature pertaining to this specialty. The preceptor should supervise closely the candidate's work and keep an informative record of the candidate's performance in order to facilitate the board's efforts in evaluating the adequacy of the candidate's training.

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office, 1015 Highland Building, Pittsburgh 6, Pa., and must be forwarded with the other required credentials and the application fee to the secretary's office at least ninety days prior to the scheduled date of the Part I examinations.

Candidates who have not had a minimum of three years formal residency type of special training should utilize Preceptorship or Supplemental Training forms, obtainable from this office to submit in addition to the regular application form.

The application fee is $25 and is not returnable.

The examination fee is $100 and is payable when the candidate is notified of acceptance for examination. This fee is not returnable after the candidate has been officially accepted by the Credentials Committee and notified to report for examination.

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners and associate examiners serve as such without compensation other than actual expenses.

Applicants declared ineligible for admission to examination may request reopening of their applications within two years of the filing date without payment of an additional application fee. A request for the reopening of an application declared ineligible by reason of insufficient training, nonlimitation of practice or similar items may not be approved in less than two years, although application may be made as specified above to avoid payment of an additional fee. This approval time may be reduced under exceptional circumstances. The request must have adequate supporting evidence of additional training and experience to warrant reconsideration. Preceptorship or Supplemental Training blanks should be used for such reports, and these will be supplied on request.

After two ineligibility or postponement rulings on any candidate's application, an entirely new application must be submitted (with or without fee, according to current requirements) in order to bring data up to date. The essential feature of this should be evidence of additional training and experience.

Applicants declared eligible but who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new and current application and to pay a new application fee.

An applicant entering military service during any national emergency and assigned to work in general surgery under conditions acceptable to the Credentials Committee may receive credit up to a maximum of six months applicable toward his three required years of specialty training. He should specifically request such credit in making his application. The additional time may be applied toward the years of practice requirement.

An applicant serving under military orders in an Army or a Navy hospital in an obstetrical and/or gynecological service under supervision will be given the same credit as if he were working under a preceptor, if these departments are supervised by diplomates of this board or recognized obstetricians-gynecologists. He may obtain full residency credit if such hospital is officially approved and listed for residency training in this specialty.

Additional time in military service with any type of general medical assignment may be applied toward the board's years of practice requirement. The Credentials Committee of the board will review and give consideration to each individual case.

Candidates should offer as sponsors or references two diplomates of this board with whom they are presently in contact, rather than men under whom they served as residents only. It is required that sponsors be from the candidate's community and currently acquainted with the candidate and his ability in his practice of the specialty.

On notice of acceptance for admission to examination, examination fee is due and also case records which should be shipped by the candidate to the secretary's office as soon as possible and not later than the date of the Part I written examination.

The candidate should make immediate acknowledgment of his notice of acceptance, at which time he will notify the secretary's office approximately when to expect his case reports.

EXAMINATIONS

Part I examinations are scheduled annually for the first Friday in February. Grades cannot usually be mailed from the secretary's office until after the following April 1. Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination which will be sent out from the board's office under sealed cover.

Special arrangement will be made through senior officers for conducting the written portion of the Part I examination for men in military service. Such candidates are requested to keep the secretary's office informed at all times of changes in their mailing addresses.

All applicants accepted for examination will be required to obtain a passing grade in both the written examination and a review of case reports (Part I), before becoming eligible for the oral-clinical and pathology examinations (Part II). The passing grade for the written examination and case reports is 75 per cent. A candidate whose grade in either or both falls below 75 per cent is conditioned.

Reexamination for the removal of conditions in Part I may be taken after one year but within three years after the first failure, without payment of an additional fee.

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Candidates appearing for reexamination under a new application after two previous failures will not be required, if they have passed all or part of the Part I examinations on their first application, to repeat such examination items already successfully cleared.

Part I

Examination consists of:

1. A comprehensive written examination, conducted annually, including questions on both obstetrics and gynecology and related basic sciences. The written examination will be limited to a maximum period of three hours.

2. The filing, not later than the date of the written examination, of twenty-five obstetrical and gynecological case reports, in condensed form. Five cases may concern major illnesses, not necessarily operative. All must be of patients for whom the candidate was personally responsible. Grades on case reports submitted for review prior to the written examination will be announced simultaneously with those of the latter; candidates who take the written examination but fail to submit case reports on or before the date of the written examination cannot be given the grade on the latter until their case reports have been received and graded.

Part II

The oral-clinical and pathology examinations given all candidates are conducted by the entire board and the associate examiners usually near the time and place of the annual meeting of one or more of the national societies represented on this board. Advance announcements of examination dates and place will be made in medical journals throughout the country.

Examination consists of:

1. Oral examination before two to four examiners.

An endeavor is made to adapt the details of the oral examination to each candidate's experience and practice. The examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the related basic sciences, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

2. Pathology examination.

The candidate is expected to identify and to discuss several obstetrical and gynecological pathologic specimens and sections.

Examiners report orally on each candidate to the assembled board, after which the results of their investigations are considered jointly by the entire board and associate examiners. After a general consideration of the details of the candidate's oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board.

The final action of the board is based on the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examination.

No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I but to take a reexamination in the oral-clinical and pathology portions only. One reexamination may be taken within three years of the original examination and first failure without formal reapplication papers. Request for reopening of the candidate's original application must be filed with a reexamination fee of $25. Data regarding additional training or experience acquired in the interim must also be provided on a Supplemental or Preceptorship Training Form obtained from the office of the secretary of the board.

The reexamination fee will be effective only on original applications filed subsequent to the date of this announcement, namely, June 1, 1949.

The candidate may reappear at the examination following the one failed by him. The board may, at its discretion, deny the candidate the privilege of reexamination.

Failure to exercise the privilege of reexamination within three years entails the filing of a new application with the usual application and examination fees.

After two failures in either Part I or Part II on the first application, the candidate may reapply and be readmitted to examinations once only. Exceptions to this ruling can be made only by action of the entire board in annual session, usually to be based on evidence of additional training and experience sufficient to warrant such action.

AMERICAN BOARD OF OPHTHALMOLOGY

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Francis Heed Adler, Member elect, Philadelphia.
Miss Lea M. Stelzer, Registrar, Cape Cottage, Maine.

Address all communications to the American Board of Ophthalmology, Cape Cottage, Maine.

REQUIREMENTS

All candidates must comply with current board regulations regardless of time of filing application.

The secretary is not permitted to make decisions as to requirements. These rulings are made only by the Committee on Credentials after reviewing the candidate's formal application.

PREREQUISITES

1. High ethical and professional standing.
2. Full citizenship in the country where the candidate practices. (Limited to countries of North and South America, their possessions and territories.)
3. A degree from a medical school of high standing, satisfactory to the board and approved by the Council on Medical Education and Hospitals of the American Medical Association. An applicant whose training has been received outside of the United States and Canada must present credentials satisfactory to the board and is required to have the certificate of the National Board of Medical Examiners if he has been in practice less than ten years.
4. Completion of an internship of not less than one year in a hospital approved by the same Council.
5. Not less than thirty-six months (a total of sixty months is required of candidates practicing both ophthalmology and otolaryngology) of combined study, training and practice of ophthalmology in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application forms must be filled out completely and accurately. Letters of endorsement, together with any other required credentials, must be sent to the secretary's office before the deadline date.
2. Fee of $100 remitted with application.
3. A list of papers or books published.
4. Written qualifying test.
5. Practical examination.
6. Special review of ophthalmic surgery.
7. Membership in the American Medical Association, or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association.

FEES

For written test and original examination, $100 (as mentioned previously).

Repeating Written Qualifying Test, $65.

Repeating Practical Examination, $65.

Single conditions, Written or Practical (except surgery), $35.

Repeating Practical Surgery, $35. Two or more conditions, $35.

Written qualifying test must be taken within three years of date of application. Thereafter new application and fee are required.

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

SPECIAL TRAINING

(Applicable so far as practicable after 1948)

This shall include:

1. Graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: *anatomy, histology, embryology, optics, physiologic* optics, visual physiology and psychology, pathology, bacteriology, pharmacology, disorders of ocular motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope. Mere factual knowledge is not sufficient; the candidate must have had training in the application of these subjects and in their use in clinical ophthalmology, especially in refraction.
2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

Anatomy
Embryology and developmental abnormalities
Biochemistry
Pathology
Bacteriology and immunology
Optics and physiological optics
Ocular physiology
Relation of eye to general diseases
Therapeutics and pharmacology
Neuro-ophthalmology

These may be covered by:

A. *Graduate Study.*—By a curricular course in the basic sciences related to ophthalmology in an approved graduate medical school.

B. *Postgraduate Study.*—By courses in individual basic sciences related to ophthalmology as given at various approved institutions. The Home Study Course of the American Academy of Ophthalmology and Otolaryngology is recommended.

C. *Residency.*—By advanced study of these subjects during a residency and by correlation of the principles involved with clinical problems.

D. *Research, Fundamental and Clinical.*—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic sciences into direct relation with the concrete clinical problem.

CLINICAL EXPERIENCE

A. By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the entire field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B. By residencies in hospitals where regular instruction by lectures and quizzes and seminars is not available. The syllabus issued by the board will guide the resident in his selection of topics to be studied.

C. By fellowships in ophthalmology.

D. By preceptorship with a well-trained and critical ophthalmologist.

E. After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F. Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate basic facts in the intelligent critical way which is expected of the specialist in practice.

G. The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WRITTEN QUALIFYING TEST

Before being accepted for examination, candidates are given a written test to ascertain their qualifications. The questions may cover any part of ophthalmology and are especially devoted to the basic studies as listed above. The written test will be given in several principal cities at the same time. Choice of cities is determined largely by the geographical distribution of candidates. Candidates found acceptable will be notified to appear for a subsequent practical and clinical examination in ophthalmology.

EXAMINATIONS

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

The board reserves the right to limit the number of candidates to be admitted to any one examination.

Candidates must be examined in all subjects listed in the sections titled Basic Studies and Practical and Clinical Examination. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

PRACTICAL AND CLINICAL EXAMINATION

The subjects of the practical examination are as follows: (1) External Diseases, (2) Ophthalmoscopy, (3) Histopathology, (4) Refraction, (5) Motility, (6) Ophthalmic Surgery, (7) Perimetry.

1. *External Diseases of the Eye and Adnexa.* — Various methods of examination, diagnoses and treatment.
2. *Ophthalmoscopy.*—Patient will be examined by the candidate and the findings described or drawn. A candidate is required to bring his own ophthalmoscope.
3. *Pathology.* — The candidate will demonstrate familiarity with general clinical pathology as well as the etiology, pathology and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize normal and pathologic histology of the eye.
4. *Refraction.*—A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.
5. *Motility.*—The candidate will demonstrate upon patients his familiarity with routine methods of examination and diagnosis.
6. *Ophthalmic Surgery.* — A candidate will demonstrate his surgical technic upon animal eyes. He must bring his own equipment for performing an extracapsular combined extraction of the lens.
7. *Perimetry.*—The candidate will be given an opportunity to examine patients by use of the arc perimeter, the tangent screen and the stereocampimeter. He may also be required to interpret charted fields.

SPECIAL REVIEW OF SURGICAL CASES

The board now requires of all candidates a list of ophthalmic operations performed within two years prior to examination. This list is to be presented with application.

The operations should be listed in groups of each type of surgery. The numbers of operations in each group must be totalled and the total number of all operations shown. This list must contain the following data:

1. Date.
2. Condition or conditions for which operation was performed.
3. Name and character of operation.
4. Identification by hospital or clinic number, or the name of a consultant or confrere who was present at the time of operation.

Circumstances which prevent any candidate from fulfilling this requirement should be fully explained, with detailed statement of candidate's surgical experience.

REEXAMINATION

Candidates may be reexamined as often as they desire on satisfactory evidence of adequate additional preparation and payment of reexamination fee. A minimum of one year must elapse between examinations when a candidate is conditioned in one or more subjects. A minimum of two years additional preparation is required of candidates who fail in all subjects. The board may, at its discretion, deny the candidate the privilege of reexamination.

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QUALIFICATIONS OF CANDIDATES

There are certain general qualifications applicable to all candidates for examination Part I and Part II. In addition, candidates must have had special training in orthopedic surgery on one of the approved plans hereinafter described:

General Qualifications

(*a*) He must be a citizen of the United States or Canada.

(*b*) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have engaged in the practice of orthopedic surgery in the United States or Canada for at least three years prior to submission of his application.

(*c*) He must have served an internship in a general hospital acceptable to this board. *Beginning in 1951 and thereafter,* applicants for Part I of the examinations must have had a year of resident training in surgery in addition to their internship.

(*d*) He must be duly authorized to practice medicine in the state or province of his residence.

(*e*) He must be ethical and have good professional standing.

(*f*) He must be a member of the American or Canadian Medical Association before he can be declared as eligible for Part II of the examinations.

Special Qualifications

The trainee should realize that preparation for the specialty of orthopedic surgery should include a sound knowledge of anatomy, pathology, physiology, bacteriology and biochemistry, as these basic sciences apply to orthopedic surgery. In addition, he should have observation and first hand experience in the diagnosis, treatment, operative and postoperative care of recent and old fractures and other orthopedic problems of adults and children. *However, when so desired, the trainee may substitute additional experience in fractures and adult orthopedics for the work in children's orthopedics as outlined in subsequent paragraphs.*

Many hospital services approved for orthopedic training have all phases represented in such proportion that they can be given concurrently over a three year period and provide a well balanced program. Such a plan of training is probably the most desirable. However, it is possible for one to obtain satisfactory training by taking various phases of the work in different institutions (matched training). In order to help the trainee plan a well balanced program of matched training the board suggests that it be arranged as follows: adult orthopedics, one year or one third of the training period; fractures, six months or one sixth; basic sciences, six months or one sixth, and children's orthopedics, one year or one third (as previously indicated a second year of fractures and adult orthopedics may be substituted for the year of children's orthopedics).

The clinical phases of training may be obtained in hospitals or under preceptors where adequate facilities are not available for instruction in the basic sciences. In such cases the trainee should spend at least six months in the graduate department of a medical school which can offer adequate facilities and instruction in these subjects.

On completion of a year of internship and a year of resident training in surgery (the latter requirement being applicable to those who apply for Part I of the examinations in 1951 and thereafter), the trainee may take his special work in orthopedic surgery by one of three plans: (1) resident training on an orthopedic service of a hospital approved by the Council on Medical Education and Hospitals; (2) combined resident training and assistantship. (3) preceptorship.

1. *Resident Orthopedic Training.*—The applicant should serve for three years as a resident in orthopedic surgery on services approved by the Council on Medical Education and Hospitals. When taken as matched training, each of the required phases should be taken on a service approved for that particular phase and all phases must be covered. If the trainee elects to substitute additional adult orthopedics and fractures for a year of children's orthopedics, the training that is substituted must be acquired on an approved orthopedic service and the total period of resident training must be three years. The type of credit available in various institutions is indicated by the symbols "A," "C," "F" and "S" in the lists of approved residencies published by the Council on Medical Education and Hospitals.

2. *Combined Resident Training and Assistantship.*—In special instances, with the prior approval of the Committee on Resident Training, the board will recognize for not over two years of training in orthopedic surgery periods of training in which the candidate combines work as resident on a hospital service, with part time assistantship to an orthopedic surgeon certified by the American Board of Orthopedic Surgery, provided that the major part of his time is spent by the candidate in the hospital service.

3. *Preceptorship.*—In certain instances, the board may recognize training under the preceptorship plan. Before taking training under a preceptor, the applicant must have completed an internship and a year of resident training in surgery. The preceptor must be a diplomate of the board whose clientele is large enough to give the trainee experience in all phases of orthopedic work. The trainee will be required to serve as full time assistant for five years, and during this period the preceptor should devote special periods of time each week, outside of the routine hours employed in the hospital and office practice, to assist the trainee with organized courses of study similar to those covered during resident training. If facilities and instruction in the related basic sciences are not available, the trainee should spend at least six months of this five year period as a student in a recognized graduate medical school where these subjects can be provided. Upon completion of the five years under a preceptor, the trainee should engage in practice, limited to orthopedic surgery, either alone or associated with a diplomate, for a further period of five years, before becoming eligible for Part II of the examinations.

Practice Requirements

No applicant can be admitted to examination on practice alone, without meeting the prescribed training through approved residencies, mixed training or preceptorship.

These requirements are intended not only to test the applicant's determination to practice in an ethical manner and limit his practice to the special field of orthopedic surgery, but also his ability to increase his scientific knowledge. Prior to making application for Part II, applicants who took training as residents on approved orthopedic services should have had at least two years of experience in practice limited to the field of orthopedic surgery. Applicants who had preceptorship training, must have had five years of practice limited to the specialty. Applicants who did not take children's orthopedics, but substituted adult orthopedics and fractures instead, must have limited their practice to the same field in which they were trained.

Credit for Service with the Armed Forces

Because in some instances applicants who served with the armed forces acquired good training in orthopedic surgery, credits up to a maximum of two years may be allowed. Such credit, however, may be granted only on presentation of evidence that such service is, in the opinion of the Committee on Eligibility, equivalent to similar periods of approved resident training. Those requesting credits for training acquired while in the service should submit their completed Record of Professional Assignments with their application.

(*a*) A year of orthopedic experience with the armed forces, when approved by the committee, may be accepted to replace one of the three required years of orthopedic training.

(*b*) A second year of orthopedic service with the armed forces may be credited as a year toward the practice requirement.

(*c*) Credit for military service will be considered for assignments covered between January 1941 and July 1946.

EXAMINATIONS

Application for Examination

Applications for examinations, Part I and Part II, shall be filed with the secretary on the prescribed forms and shall be accompanied by the prescribed fees which the board may fix from time to time. The required data shall be entered in typewritten form and the application must be accompanied by an unmounted autographed recent photograph of the applicant. The names of two diplomates of the board shall be supplied by the candidate for reference.

The completed application must be filed with the secretary at least sixty days prior to date set for examination.

The data submitted in each application must be checked and verified in the offices of the American Medical Association.

Letters of reference shall be obtained by the secretary from diplomates whose names have been submitted by the applicant. Additional information may be sought from other available sources.

If an application has been approved, the candidate will be notified by the secretary and should then forward the required fee for the examination, Part I or Part II, as the case may be.

Examinations

Applicants for certification will be required to take the examination of the Board in two parts. No applicant shall be permitted to take both parts of the examination at the same time, nor can he be permitted to take Part II until he has successfully passed Part I. These may be held in different places and on different dates to meet the needs and convenience of candidates and board members. Announcement of the time and place for examination will be made through the medical journals.

Examination, Part I

(*a*) *Eligibility for Examination, Part I.*—Beginning in the year 1952 the minimum requirement for eligibility for examination, Part I, shall consist of completion of an internship; a year of resident training in general surgery and two years of resident training in orthopedic surgery on an approved service.

Applicants filing in 1951 for Part I examination to be given in 1952 are subject to these minimum requirements.

Applicants who have completed more than this minimum requirement are eligible for Part I at any time up to completion of their full requirements; however, candidates who are fully qualified must submit application for Part I and successfully pass this examination before submitting application for Part II.

Candidates who make application based on preceptorship training will be considered by the Committee on Eligibility on completion of an internship and a year of resident training in surgery, followed by five years as a full time assistant under a preceptor who is a diplomate of the board.

(*b*) *Examination, Part I.*—This part shall consist of a written examination and oral interviews covering those parts of anatomy, pathology, physiology and biochemistry related to surgery and orthopedics. In addition there will be questions on fundamental surgical principles, elementary fractures and orthopedic procedures, history taking and physical examination.

Examination, Part II

(*a*) *Eligibility for Examination, Part II.*—Candidates applying for examination, Part II, must have successfully passed Part I and must have completed the prescribed training and practice periods, as defined in Special Qualifications. A candidate who does not appear for examination Part II within ten years after passing examination Part I will be required to again take and pass examination Part I before admission to examination Part II.

A separate application for Part II must be completed and forwarded to the secretary, together with the required application fee, at the specified time.

(*b*) *Examination, Part II.*—This part of the examination will be given in only one city once each year. It will consist of oral quizzes and a written examination covering the advanced work in all phases of orthopedic surgery. The oral examinations will include an interview in anatomy, pathology, fractures, congenital and acquired deformities, static and postural defects and other orthopedic subjects.

(*c*) Applicants who have qualified with a year of children's orthopedics will have separate written and oral questions related to this phase of orthopedic surgery.

In certain instances, on recommendation of the Committee on Eligibility a representative of the board may be requested to make a visit of inspection to review the applicant's work in his own community. In other instances, the committee may require the candidate to submit copies of complete records of twenty-five major surgical cases and abstracts of an additional twenty-five cases.

Reexamination

An applicant who fails to pass Part I or Part II of the examinations may be reexamined a second and third time in each part by paying the prescribed examination fee each time he is reexamined. Additional application fees are not required for reexamination. The applicant who fails must appear for his second or third reexamination within three years after the first failure. After three years a new application with the appropriate fee must be submitted.

After three successive failures in Part I or Part II of the examinations the applicant must have had additional graduate training in orthopedic surgery before submitting a new application.

Times and Places for Examination

Part I of the examination will be given probably during May of each year in various centers that will be designated by the board. The secretary will give applicants advance notice of the date, place and hour.

Part II of the examination will be given in one place and probably not oftener than once each year. As a rule it will be in connection with the meeting of the American Academy of Orthopedic Surgeons and will precede the meeting.

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REQUIREMENTS

The following qualifications of candidates for examination are required by the Board:

1. A candidate acceptable for the examination (1) must have been a citizen of the United States (or Dominion of Canada) for at least three years; (2) must have been a graduate for four years or more (five years after 1950) of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association; (3) must have had at least one year's general internship in a hospital approved by the American Medical Association or other nationally recognized organization; (4) must be of good moral character and ethical in his professional relations. Graduates of foreign medical schools should have passed the examination of the National Board of Medical Examiners. Candidates who have become naturalized citizens must give proof of their medical education and graduate training. Candidates from foreign countries must be permanent residents and citizens thereof and meet the general requirements above.

2. A candidate must be a member of the American Medical Association, the Canadian Medical Association, or other medical societies of equal standing recognized by the Council on Medical Education and Hospitals of the American Medical Association.

3. Each candidate must have had acceptable training and be competent in the applied basic sciences fundamental to the intelligent practice of otolaryngology. Anatomy of the ear, nose, throat, neck, chest, esophagus and nervous systems, pathology, bacteriology, physiology, didactic otolaryngology and fundamentals of surgery are required. These requirements may be fulfilled in residency training or in an organized postgraduate course.

4. Effective Until 1950—a candidate must have completed two years' residency in otolaryngology or three years' residency in ophthalmo-otolaryngology and have restricted his practice to otolaryngology (or ophthalmo-otolaryngology) for a minimum of three years or four years, which may include the period of training.

5. Effective Until 1950—five years' practice limited to otolaryngology (or ophthalmo-otolaryngology) may be accepted in lieu of the requirements in section 4, if the training has been under guidance or preceptorship which meets the approval of the Credentials Committee of the Board.

6. Effective After July 1, 1950—candidates must have completed a course of three years' study in otolaryngology, or four years' study if ophthalmology is included (in which case there must be a minimum of 50 per cent spent in the study of otolaryngology). The three years may have been spent in a residency which includes study of the basic sciences as specified in section 3, approved by the Board and the Council on Medical Education and Hospitals of the American Medical Association, or the candidate may have completed an organized course in the basic sciences and approved training in a residency which would give a total of three years' study in the specialty. A year's residency in surgery or medicine, or a two years' rotating internship, may be accepted as the equivalent of one year's training in otolaryngology. In addition to the foregoing, the candidate must have had a minimum of one year in practice limited to the specialty.

7. Effective After July 1, 1950—a candidate, in addition to the requirements in sections 1, 2 and 3, may qualify for examination if he has limited his practice to otolarynglogy (or ophthalmo-otolaryngology) for six years under the supervision and direction of practitioners in the specialty approved by the board, in association with a hospital staff approved by the Council on Medical Education and Hospitals of the American Medical Association.

8. Candidates who cannot meet all the listed requirements may be accepted for examination in exceptional circumstances, but only on the recommendations of the board.

9. A limited certificate in one of the subspecialties of otolaryngology may be issued at the discretion of the board to an exceptionally well qualified individual in the special field in which the certificate is desired.

All candidates must comply with current board regulations, regardless of the time of filing application.

APPLICATION AND FEES

1. Application must be made in duplicate on special blanks procured from the secretary. The completed application blanks must be returned to the secretary, together with the other required credentials, at least one hundred and twenty days in advance of the examination at which the candidate desires to appear.

2. The applications must be accompanied by two small photographs of the candidate, together with verification of the period of enrolment from the institutions where training in otolaryngology was obtained, and the names of two or more otolaryngologists, preferably diplomates of the board, from the vicinity of the candidate's place of residency, to be used as references.

3. The fee for the examination is $100, no part of which is returnable. Of this sum $25 must accompany the application. No application will be acted on until the $25 application fee is received. The balance of the fee—$75—must be paid to the secretary on notification that the candidate has been accepted for examination and at least ninety days in advance of the date of examination. A reexamination fee of $50 is required of candidates conditioned in one or more subjects.

4. The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expense.

5. The application remains valid for three years. An applicant must appear for examination within this time or forfeit the fee.

6. Candidates whose credentials have been found satisfactory and who meet the requirements of the board will be notified ninety days prior to the date of examination. The number of candidates who can be admitted to any one examination is limited. Because of the large number of applications on file, delay in assignment for examination may be inevitable. Appointments will be given in the order applications are accepted.

7. The board, acting as a committee of the whole, reserves the right to reject an applicant for any reason deemed advisable and without stating the same, and the action of the board shall be final.

EXAMINATION

Examination will be held at such time and place as the judgment of the board may dictate. Advance notice of examinations will be given in The Journal of the American Medical Association and the several special journals devoted to otolaryngology. So far as is possible these will be held twice a year at, or near, the time and place of meeting of the American Medical Association, or special societies, and of the American Academy of Ophthalmology and Otolaryngology. The examinations cover from two to four days.

Scope.—This examination encompasses all phases of otolaryngology and peroral endoscopy, including faciomaxillary surgery, and surgery of the neck, excluding the thyroid.

The type of examination is as follows:

1. Clinical, covering the actual handling of patients, including history taking, physical and functional examinations, the use of laboratory and roentgen findings and a discussion of differential diagnosis.
2. Didactic, oral examinations covering all phases of otolaryngology.
3. Gross and microscopic pathology.
4. A written examination may be included when the board deems this advisable.

REEXAMINATION

A candidate who is conditioned in examination may be admitted to a subsequent examination after one year and within the three year period dating from his application, on payment of an additional fee of $50 and one hundred and twenty days' notice of intention to appear is required.

Candidates who have failed in the examination may be accepted for reexamination on recommendations of the credentials committee. Satisfactory evidence of further study and progress will be required. A new application must be filed. The fee for reexamination for such candidates is $100, $25 of which must accompany the application. The balance of the fee, $75, will be due on notification of acceptance.

CERTIFICATION

1. A certificate granted by the board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice otolaryngology, nor does the board intend or attempt in any way to interfere with or limit the professional rights and activities of any duly licensed physician. Its aim is to improve the standards of practice of otolaryngology and to certify as specialists those who voluntarily comply with its requirements and regulations.

2. The final action of the board is based on the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examinations.

AMERICAN BOARD OF PATHOLOGY

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A. General Requirements

1. Satisfactory moral and ethical standing in the profession.
2. License to practice medicine or a certificate of the National Board of Medical Examiners.
3. Membership or associate membership in the American Medical Association or membership in a national society accept-

able to the board by citizens of the United States. (At present, these include American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Medical Association, or American Society for Experimental Pathology.) For citizens of other countries, membership in a national medical society of that country is required.

4. The applicant must devote his time primarily and principally to the practice of pathology.

B. PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a medical school in other countries acceptable to the board.

C. SPECIAL TRAINING AND EXPERIENCE

1. The board admits candidates to examinations who are otherwise eligible and who have had either of two following types of training and experience.

a. After five years, if four of the five years have been in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association or by the board; or

b. After eleven years if none of the training and experience has been in institutions so approved.

2. The specific requirements for those acceptable after five years are as follows:

a. Pathologic anatomy only.

(1) Four years of supervised study and training in an institution approved for residency training in pathologic anatomy by the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university for one of the four years. In addition, time, not to exceed twelve months, spent in a department of pathology of an approved school of medicine after the completion of the second year of undergraduate study may be counted for full credit toward the four years.

(2) One additional year which may be a continuation of the preceding or may be independent practice of pathologic anatomy in a hospital approved by the American Medical Association or other institutions acceptable to the board.

b. Clinical pathology only.

(1) Four years of supervised study and training in an institution approved for residency training in clinical pathology by the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university, for one of the four years. Candidates, holding also a master's or doctorate degree in a special field of clinical pathology (bacteriology, serology, chemistry, parasitology or hematology) may obtain time credit for not more than twelve to twenty-four months toward the four years for this work regardless of whether it was taken before or after the medical degree. The evaluation of time credit will depend on how much of the broad field of clinical pathology was covered in the graduate work.

(2) One additional year which may be a continuation of the preceding or may be independent practice of clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board.

c. Pathologic anatomy and clinical pathology.

(1) Four years of supervised study and training divided as follows:

(*a*) Two years of supervised study and training in pathologic anatomy as outlined in the preceding paragraph C-2-a-(1).

(*b*) Two years of supervised study and training in clinical pathology as outlined in the preceding paragraph C-2-b-(1). Candidates declared eligible before July 1, 1952 may at their own election substitute one year (twelve months) of a straight or rotating clinical internship for one year of this special training in clinical pathology. After July 1, 1952, all candidates applying for both pathologic anatomy and clinical pathology will be required to have two years of supervised training in clinical pathology.

(2) One additional year which may be a continuation of the preceding or may be independent practice of both pathologic anatomy and clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board. After July 1, 1952, candidates who elect to claim credit of one year for a clinical internship must take this fifth year as supervised study and training in clinical pathology in institutions approved for residency training in clinical pathology by the Council on Medical Education and Hospitals of the American Medical Association or by the board. Candidates declared eligible after July 1, 1952, who do not take a clinical internship, may, after four years of training as outlined in C-2-c-(1)-(*a*) and (*b*), spend the fifth year in independent practice in an institution or laboratory acceptable to the board.

Note.—As outlined in the preceding paragraphs, the total time requirements of the board are unchanged after July 1, 1952, namely, five years of study or practice after graduation from medical school (with exceptions noted in sections C-2-a-(1) and C-2-b-(1).

3. The specific requirements for those acceptable after eleven years are as follows:

a. The practice of pathology under circumstances acceptable to the board for a period of not less than eleven years. At the election of the candidates, not to exceed one year of straight or rotating clinical internship may be substituted for one of the eleven years. For those candidates in this category who have had some special study and training in pathologic anatomy or clinical pathology acceptable under paragraphs C-2-a, b or c, double time credit will be allowed. Thus, if a person has two years of acceptable supervised study and training, only seven years of practice are required.

D. SPECIAL QUALIFICATIONS

1. Prior to Dec. 31, 1947, the board at its discretion certified candidates without examination, if the following conditions were met as of July 1, 1939:

a. That the candidate has been for a period of five years of professional rank in a department of pathology in an approved medical school; or

b. That the candidate had been practicing pathology for ten years in a senior position in a hospital having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association or in an institution acceptable to the board.

CREDIT FOR MILITARY SERVICE

Credit may be allowed for training and experience in pathology in the federal services during the period July 1, 1940 to June 30, 1947. This credit for training or experience or both is given on an individual basis and will depend on the opportunity the applicant has had as indicated by his or her medical service record in the specialty of pathology.

After July 1, 1947, credit for those military services will be given on the same basis as it is in civilian institutions, except that the rule in the preceding paragraph will not apply to reserve officers who continue on active duty or are called to active duty after that date.

SUBSPECIALTIES OF PATHOLOGY

(IN FORCE AFTER JULY 1, 1948)

Candidates who have met all general requirements and who have successfully passed the examination in pathologic anatomy and clinical pathology may apply for special designation of a subspecialty of pathologic anatomy or clinical pathology. The board, at its discretion, may approve this application and, after the candidate has successfully passed a prescribed examination, will issue a certificate designating the subspecialty, reading "Pathologic Anatomy (Neuropathology)," "Clinical Pathology (Clinical Bacteriology)," etc.

Candidates who have met all general requirements and who have had five years of special training and experience in a special field of pathology which is acceptable to the board may apply to the board for certification in this special field. The board, at its discretion, may approve this application, and after the candidate has successfully passed a prescribed examination, will issue a certificate reading "Neuropathology," "Clinical Bacteriology," etc.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. An application cannot be given consideration by the board unless it is accompanied by the application fee.

The application or examination fee for candidates is $50. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations, the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The application fee of $50 has been determined after careful consideration and is based on actual estimates of the expenses of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the Board, his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the examination.

EXAMINATIONS

Written and oral examinations will be held at the discretion of the board at or near the time and place of national medical meetings. If a number of applications from any region of the country are received, an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examiners will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis, interpretation and technic. The applicant may apply for certification in either pathologic anatomy or clinical pathology or both.

The examinations in pathologic anatomy consist of a written test, an oral examination on gross pathology and a practical examination in miscroscopic pathology. The examination in clinical pathology consists of a written test and an oral and practical examination in the six phases of clinical pathology: bacteriology, hematology, clinical chemistry, parasitology, serology and clinical microscopy.

DEFINITIONS

1. Pathologic anatomy is that branch of pathology which deals with the morphologic aspects of disease, recognition being given that that definition covers two phases of pathology.

(*a*) The applied phase with special attention to the description and diagnosis of gross and microscopic specimens.

(*b*) The academic phases of teaching and general morphologic diagnosis.

2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, clinical chemistry, parasitology, hematology, endocrinology and clinical microscopy, the application of the physical and biologic sciences to the diagnosis, prognosis and treatment of disease.

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Hugh McCulloch, Chicago.
Ralph V. Platou, New Orleans.
Arthur H. Parmalee, Pacific Palisades, Calif.
A. Ashley Weech, Cincinnati.
John McK. Mitchell, Executive Secretary, 6 Cushman Road, Rosemont, Pa.

APPLICANTS FOR CERTIFICATES

*Requirements for Applicants.**—All candidates for examination for certification must meet the following requirements:

1. Graduate from a Class A medical school.
2. One year of rotating or one year of pediatric internship in an approved hospital.
3. Two years of specialized residency-type training in an approved pediatric center.

On May 1, 1946, it was ruled that at least one year of the two years of required residency training must be a full time pediatric residency or internship in an approved institution. Because of the shortage of residencies, the board at this time voted that "temporarily" the second year of required residency training might be met in various ways listed below, although the board recommends that whenever possible candidates complete the two years as regular residents.

(*a*) A full time academic postgraduate course of nine months in an approved pediatric center is credited for one year's work.

(*b*) Shorter postgraduate courses of three to four months duration must add up to a full year.

(*c*) A maximum of three months' credit each is allowed for full time residency type training in allied pediatric subjects, such as pediatric allergy, pediatric psychiatry, pediatric pathology, pediatric cardiology and newborn service.

(*d*) A maximum of six months' credit is allowed for residency training in an approved contagious disease hospital.

4. A subsequent term of two years of specialized study or practice or a combination of the two. Credit for one year toward this requirement is allowed for military service.

Attention is invited to the fact that the primary duty of the resident must be the care of patients under supervision, if full credit in satisfaction of the residency training requirement is expected. Research residencies which involve little or no clinical training are creditable for only three months. Research residencies which include significant clinical training may be prorated to a total of six months for a year of service. Teaching fellowships may not be offered in lieu of residency appointments.

Both research residencies and teaching fellowships are, of course, entirely acceptable in satisfaction of the practice or further study requirement. Portions of a research residency not applicable for residency training credit may be carried over for practice credit.

5. Preceptorships are not accepted for credit toward the residency requirement, but are accepted toward the practice requirement.

The board defines service in a pediatric center as full time devoted to rounded experience in an approved hospital which includes ward and outpatient service, experience with newborn, including prematures, and both therapeutic and preventive pediatrics. It is expected, also, that the service will include adequate graduate training in the basic medical sciences, as well as in the clinical laboratory and public health aspects of the specialty. The time served in pediatric centers need not be continuous or spent in the same institution.

A list of hospitals approved for training in pediatrics by the Council on Medical Education and Hospitals of the American Medical Association and by the American Board of Pediatrics will be found in the Internship and Residency Number of The Journal of the American Medical Association (**140**:203-205 [May 14] 1949).

The application fee is $125. This is used entirely for administrative expenses.

The full fee must be remitted with the application. Refund will be made only if the applicant is refused an examination. Applicants who failed an examination may apply for a second examination after two years have elapsed and the candidates have presented evidence of continued study and activity in pediatrics. The fee for a second examination is $75.

Application must be made on special blanks which may be secured from the executive secretary. These should be sent to the executive secretary well in advance of the date on which the candidate expects to be examined. At date of publication, lists are filling approximately one year ahead. No application will be accepted more than a year in advance of eligibility date.

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*The board advises all future candidates to communicate with the office of the executive secretary before entering on training to avoid misunderstandings.

Letters from two competent pediatricians recommending each applicant must be sent to the executive secretary of the board. These letters should not accompany the application, but should be sent directly to the executive secretary. No member of the board, or official examiner, may recommend any applicant.

A list of papers or books published must be sent in with the application blanks.

EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed on the applicants in meeting the examiners.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination, although written ones are frequently given. At present the board is giving a written examination six weeks preceding the oral examination. The written examination is given locally under a monitor. It is not proposed at the present time to require the applicant to send in case reports. The board feels that the clinical and abstract aspects of growth and development are fundamental parts of pediatric training.

INFORMATION ON CERTIFICATION IN ALLERGY BY THE AMERICAN BOARD OF PEDIATRICS

The American Board of Pediatrics, Inc., has established certification in allergy as a subspecialty of pediatrics.

Certification in pediatrics by the American Board of Pediatrics is a prerequisite for certification in allergy. Those who already hold certificates of the American Board of Pediatrics and who wish to be certified in allergy must make formal application to the executive secretary of the American Board of Pediatrics. Those who are not yet certified in pediatrics and who desire certification in allergy as well should indicate this in their application to the board of pediatrics as examination in both subjects may be held at the same time.

The application fee for certification in allergy will be $25 in addition to the application fee for pediatric certification.

An Advisory Committee of Allergy has been appointed to act with the Board of Pediatrics in all matters pertaining to the selection and examination of applicants for subspecialty certification. This committee is identical with the Advisory Committee on Allergy of the American Board of Internal Medicine.

The present members of the committee are:

Harry L. Alexander, St. Louis.
Robert A. Cooke, Chairman, 60 East 58th St., New York.
Leslie N. Gay, Baltimore.
W. C. Spain, New York.
Francis M. Rackemann, Boston.
Oscar M. Schloss, 125 E. 72nd St., New York, (pediatric representative).

The Advisory Committee on Allergy has outlined the requirements for applicants who desire examinations in the subspecialty of allergy as follows:

1. Two years, full time, in a satisfactory allergy clinic and its hospital (including training, in both allergy and pediatrics), or
2. One year, full time, in the allergy clinic and its hospital, and two additional years of full attendance on such an allergy clinic and its activities, or
3. Five years, full attendance, on such an allergy clinic and its activities, or
4. Special training under qualified preceptors, solely or in combination with aforementioned types of training, and such other training as might be felt adequate to prepare an individual for the practice of allergy.

It is further the opinion of the committee that clinics for such training should fulfil the following qualifications:

1. They should be in hospitals that have been accepted by the Council on Medical Education and Hospitals of the American Medical Association and by the American Board of Pediatrics for training and certification in pediatrics and for residencies in pediatrics or medicine.
2. The director of the Allergy Clinic shall be a diplomate certified in allergy by the American Board of Internal Medicine, or the American Board of Pediatrics.

When accepted the diplomate will receive from the American Board of Pediatrics a certificate in allergy and will be listed as a specialist in allergy.

Prospective applicants for certification in the subspecialty of allergy may apply to the executive secretary of the American Board of Pediatrics.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION

Walter J. Zeiter, Chairman, Cleveland.
Benjamin A. Strickland Jr., Vice Chairman, Washington, D. C.
Robert L. Bennett, Secretary-Treasurer, Georgia Warm Springs Foundation, Warm Springs, Ga.
John S. Coulter, Chicago.
Earl C. Elkins, Rochester, Minn.
Kristian G. Hansson, New York.
O. Leonard Huddleston, Santa Monica, Calif.
A. B. C. Knudson, Washington, D. C.
Richard Kovacs, New York.
William H. Schmidt, Philadelphia.
Arthur L. Watkins, Boston.

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

GENERAL QUALIFICATIONS

A. Satisfactory moral and ethical standing in the profession.

B. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. (Exceptions to the foregoing qualifications shall be made by the American Board of Physical Medicine and Rehabilitation for good and sufficient reasons.)

PROFESSIONAL QUALIFICATIONS

A. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.

B. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same council.

SPECIAL TRAINING

A. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same council and by the American Board of Physical Medicine and Rehabilitation as competent to provide a satisfactory training in physical medicine.

B. This period of specialized preparation shall include: (*a*) graduate training in anatomy (including kinesiology and functional anatomy), physics (including radiation physics, electronics and medical instrumentation), physiology, pathology and other basic sciences which are necessary to the proper understanding of physical medicine; (*b*) an active experience of not less than two years in hospitals, clinics, dispensaries and diagnostic laboratories recognized by the Council and the American Board of Physical Medicine and Rehabilitation; (*c*) the written and oral examinations, given by the American Board of Physical Medicine and Rehabilitation, shall include questions concerning the basic sciences, clinical practice and laboratory and public health problems as related to physical medicine.

C. An additional period of not less than two years of study and/or practice in physical medicine.

METHOD OF EXAMINATION

Physical medicine includes the diagnosis and treatment of disease by means of physical agents. These physical agents include heat, water, electricity, ultraviolet and infra-red radiation and mechanical devices and agents (such as massage and therapeutic exercise).

Physical medicine has been termed medical applied biophysics. As now practiced, the special field of physical medicine includes (1) the employment of physical agents in diagnosis (as in electrical tests for reaction of degeneration or in the cold pressor test), (2) the employment of physical agents in treatment, (3) occupational therapy and (4) the physical rehabilitation of convalescent and disabled patients.

The physician who specializes in physical medicine must have a thorough knowledge of the basic sciences as related to these subjects as well as clinical practice in the various phases of physical medicine.

Written and oral examinations will be given which will assure the board that the applicant is thoroughly grounded in:

A. The basic sciences including:

(*a*) Anatomy (including kinesiology and functional anatomy). Because of the importance of proper knowledge of the function of muscles in conjunction with the administration of therapeutic exercise and physical reconditioning of convalescent and disabled patients, the applicant will be carefully examined concerning his knowledge in this field.

(*b*) Physics (including radiation physics, electronics and instrumentation). Because physical medicine deals largely with the employment of physical agents, in diagnosis and treatment, the applicant will be expected to be well informed concerning the fundamentals of medical physics. He will be expected to be familiar with such subjects as the physics of heat, ultraviolet and infra-red radiation, and electricity (including the physics of low voltage currents and high frequency currents as employed in medicine). Because of the newer developments in medical electronics and medical instrumentation, the applicant will be examined concerning these subjects.

(*c*) Physiology. The applicant will need to know the fundamentals of physiology, especially the physiology of movement and the physiologic effects of the various physical agents employed in medicine.

(*d*) Pathology. A basic knowledge of pathology as related to physical medicine will be required and questions dealing with this subject will be included in the examination.

(*e*) Other fundamental sciences. The applicant will be examined concerning his knowledge of such subjects as biochemistry and bacteriology as related to physical medicine.

B. The clinical aspects of physical medicine including:

(*a*) Thermotherapy. The various clinical applications of heat and cold both locally and generally should be thoroughly familiar to the applicant.

(*b*) Hydrotherapy. The methods of employing hydrotherapeutic devices and procedures will be covered in the examination.

(*c*) Electrotherapy. Questions concerning clinical, diagnostic and therapeutic uses of the constant current, interrupted currents, sinusoidal and high frequency currents will be included in the examination.

(*d*) Radiation therapy. The applicant will be examined especially concerning the diagnostic and therapeutic uses of ultraviolet and infra-red radiation. (Applicants will not be required to answer questions concerning the therapeutic applications of roentgen rays and radium which are not included in the field of physical medicine but in the field of radiology.)

(*e*) Kinesitherapy. Questions concerning the clinical uses of therapeutic exercise and massage will be included in the examination.

(*f*) Occupational therapy. The applicant will be expected to answer questions concerning the indications for, and clinical applications of, various types of occupational therapy.

(*g*) Physical rehabilitation. Because of the importance of the understanding of the philosophy of convalescent reconditioning and rehabilitation of the seriously disabled person, the applicant will be expected to have a thorough knowledge of the modern developments in these phases of physical medicine.

APPLICATION

The application form shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital or dispensary staff appointments, teaching positions, membership in medical societies, medical papers published, and the names of three well known physicians to whom the board may write for professional and character references.

The application shall also be accompanied by one recent, signed photograph of the candidate mounted on the application and the registration and examination fee of twenty-five dollars which fee will cover both the written and oral examinations. (In case of rejection of application, this fee will be refunded with the exception of $10, which will be considered as a registration fee.) An additional fee of $50 will be required when the certificate is issued.

AMERICAN BOARD OF PLASTIC SURGERY, INC.

William S. Kiskadden, Chairman, Los Angeles.
Arthur Neal Owens, Vice Chairman, New Orleans.
Louis T. Byars, Secretary-Treasurer, 400 Metropolitan Bldg., St. Louis 3.
William Milton Adams, Memphis, Tenn.
Gustave Aufricht, New York.
Bradford Cannon, Boston.
Albert D. Davis, San Francisco
Alfred W. Farmer, Toronto, Canada.
Frederick A. Figi, Rochester, Minn.
William G. Hamm, Atlanta, Ga.
Sumner L. Koch, Chicago.
William F. MacFee, New York.
James T. Mills, Dallas, Texas.
Wallace H. Steffensen, Grand Rapids, Mich.
Jerome P. Webster, New York
Estelle E. Hillerick, Clerical Secretary, 4647 Pershing Ave., St. Louis 8.

GENERAL ELIGIBILITY REQUIREMENTS

1. Moral and ethical standing in the profession satisfactory to the board. The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

3. Those whose activities are limited to the practice of plastic surgery.

4. This board will accept as applicants for examination only those who are full citizens of the United States or Canada. Notarized statements, not original citizenship papers, attesting to the fact of full citizenship in the United States or Canada must be furnished by foreign born applicants when the application is filed. Such candidates must have at least two years of practice in plastic surgery in North America after completing the training required by the board.

PROFESSIONAL REQUIREMENTS FOR QUALIFICATION

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by this board.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or what would constitute in the opinion of the board the equivalent of such training.

3. Two years of postgraduate work in general surgery beyond the intern year, as a resident or an assistant resident in an approved hospital, or a period of training gained elsewhere judged by the board to be the equivalent.

4. Training in general plastic surgery in an acceptable[1] residency or preceptorship for an additional period of not less than two years, also to be taken in an approved hospital, or under auspices satisfactory to this board.

5. An additional period of not less than two years of practice in plastic surgery.

6. After Jan. 1, 1953, certification by the American Board of Surgery shall be a prerequisite for eligibility for examination by the American Board of Plastic Surgery.

The aforementioned training may be taken as a resident in surgery and in plastic surgery in an acceptable hospital,[1] or under a sponsorship accredited by the American Board of Plastic Surgery for such training. By the latter statement it is meant that one may secure the necessary and specified training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered.

The period of special training should emphasize the relation of the basic sciences—anatomy, pathology, physiology, biochemistry and bacteriology—to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics and wound healing.

Because of vagaries of training, such as changes from one specialty to another, interims of military duty and other service to the country, the aptitude and skill of candidates, the board may, at its discretion, review and make recommendations for or against certification of certain applicants outside of the listed qualifications and requirements.

The board reserves the privilege of requesting lists of operations done solely by the candidate for one or more years, or of requesting special and extra examinations, written, oral or practical, and of requesting any specific data concerning the candidate that may be deemed advisable before making final decision for certification.

Eligibility rulings or an evaluation of a candidate's qualifications cannot be made by the secretary or by any one member of the board. These are made only by the Committee on Credentials and Requirements after a review of the candidate's formal application for such rulings, and approved by the board where necessary.

TRAINING FACILITIES

Neither the board nor its individual members can be responsible for the placing of applicants for training, but it should be noted by the applicants that accredited work will be considered that which is done on a plastic surgery service approved by the board.

The American Board of Plastic Surgery, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association and the American College of Surgeons, evaluates training facilities in institutions providing acceptable residencies in plastic surgery.

MILITARY CREDIT

Credit for military service is given on an individual basis, each case being considered on its own merits and the amount of credit given being determined by the board when the information is submitted with the application.

CASE REPORTS

Candidates whose general eligibility and professional requirements are found satisfactory shall be required to submit thirty-five diversified case reports, together with photographs, to the secretary of the board. This group of case reports must include a variety of material from the entire body rather than a number of cases of one type, and should carry the candidate's personal deductions, conclusions and comments and should be sufficiently detailed to show if the conclusions drawn indicate a grasp of the subject and if the results justify the procedure.

Each case report should be typewritten on paper approximately 8½ by 11 inches, separately numbered and paged, with the candidate's name on each page. Each report should be individually assembled and held by removable fasteners and should have a cover sheet with the candidate's name, the number of the case, hospital number, diagnosis and a brief summary of the case (not over 100 lines). The case reports, photographs and other data are to be filed with the permanent records of the board. Cases should be chosen from the private practice of the candidate or from the hospital or clinic service. Identification numbers of cases presented are required. The initials, color, age and occupation of each patient should be stated as should the name of the hospital where treated and dates of admission, operation and discharge. The important details of family history, if relevant, and of the previous history should be given. The history of the condition for which the candidate was consulted should be stated clearly and concisely, indicating previous treatment, if any, and the mental, social or economic factors involved. The physical examination of the patient with special reference to the existing deformities should be carefully described. All laboratory and other special examinations, such as roentgenograms, which were made, should be reported, with a statement of what was determined by them. The indications for operation and for the type of operation employed should be given; the preliminary treatment and the type of anesthesia used should be stated. A full description of the operative technic with methods of hemostasis, suture and drainage, if any, and the name of the assistant should be given. The early and late postoperative course and results should be described.

Photographs of conditions and drawings of operative technic, illustrative of each case, should be included and securely attached to each case report, with the name of the candidate and the number of the case indicated. All photographs should be made by a sharp focus lens from untouched negatives with identical lighting conditions, exposure and developing, and should show conditions before and after operations with clear detail.

If the case reports (and lists of operations when requested) are approved, the candidate will receive subsequent information regarding taking the examinations.

The board at its discretion may request certification of case reports by the hospital where the operations were performed. The following form should accompany the case reports: "I hereby certify that the planning and essential surgical procedures described herein were carried out by me as an independent operator."

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his ability.

EXAMINATIONS

Candidates will go to a center designated by the Examination Committee (through the secretary's office) for a written and oral examination lasting three days, the first two of which will be devoted to the written examination. On the third day an oral examination will be given. The written examination will be given under the following headings, all as related to plastic surgery.

1. Theory and practice of plastic surgery.
2. Applied anatomy, applied physiology.
3. Pathology, bacteriology, clinical laboratory methods (pharmacology).
4. Reaction of tissue to injury; surgical accidents; anesthesia.

The candidate shall be required to receive a grade of 65 per cent in each portion of the written examination and an average grade of 75 per cent on the entire written examination.

At the time of the oral examination, the candidate will be required to examine, diagnose, and present a plan or plans of correction of cases presented by the examiners. In addition, a general oral examination pertaining to plastic surgery may be given.

Either prior to or following the above examination, the candidate should be visited at his place of practice by a member or members of the board to observe him operate and to examine a number of his preoperative and postoperative cases, if so desired.

REEXAMINATIONS

Candidates who have failed in any portion of the examination may be admitted to another examination after one year, or within three years, except in such cases as the board may for good and sufficient reason deny a candidate the privilege of reexamination. The candidate must give sixty days' notice requesting a reexamination and pay a fee of $25.00 for the written reexamination and $25.00 for the oral reexamination.

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[1] An acceptable residency is one which has been approved by the Council on Medical Education and Hospitals of the American Medical Association jointly with this Board.

FEES

The fee for application and examination is $150; of this sum, $25 must accompany the application. The remaining $125 must be paid when the candidate is notified of acceptance for examination. There will be no refunds. This fee may be increased at the discretion of the board.

The board is a nonprofit organization. The fees of candidates are used solely for defraying the actual expenses of the board.

Because of the limited number of surgeons certified by this board it is necessary for a while to request a voluntary contribution of $10 annually from diplomates, after the first year's certification, to defray expenses of the board.

CERTIFICATION

After a candidate has met the requirements for eligibility and passed the examinations of the board, a certificate attesting his qualifications in plastic surgery will be issued to him by the board, signed by its officers, and having the seal of the board affixed thereto.

It is the board's prerogative to determine the fitness professionally and ethically of any candidate for its certificate, and the action or decision of the American Board of Plastic Surgery regarding the certification of any candidate shall be final.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH, INC.

Walter L. Bierring, Chairman, Des Moines, Iowa
Felix J. Underwood, Vice Chairman, Jackson, Miss.
Ernest L. Stebbins, Secretary-Treasurer, 615 North Wolfe Street, Baltimore.
Gaylord W. Andeson, Minneapolis.
J. H. Baillie, Toronto, Canada.
Floyd C. Beelman, Topeka, Kan.
Richard F. Boyd, Arlington, Va.
Matthew R. Kinde, Battle Creek, Mich.
Emil E. Palmquist, Seattle, Wash.
William P. Shepard, San Francisco.
James S. Simmons, Boston.
V. A. Van Volkenburgh, Albany, N. Y.
Reginald M. Atwater, Alternate, New York.

GENERAL QUALIFICATIONS

1. Moral and ethical standing in the profession satisfactory to the board.
2. Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or from a foreign medical school satisfactory to the board.
3. An internship of at least one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association or in a foreign hospital satisfactory to the board.
4. Licensure to practice medicine in the United States or the Dominion of Canada.
5. Special training in preventive medicine or public health which shall include:
   - (*a*) A period after internship of not less than six years of special training, teaching or practice in preventive medicine and public health which must include (*b*) and (*c*).
   - (*b*) Successful completion of at least one academic year of graduate study leading to the degree of Master of Public Health or an equivalent degree or diploma or an equivalent satisfactory to the board.
   - (*c*) Field training or residency of at least two years of field experience in general public health practice which included planned instruction, observation and active participation in a comprehensive, organized public health program, one year of which may be an approved clinical residency in a field directly related to public health.
6. Limitation of practice to teaching or practice of preventive medicine or public health as a specialty.

THE FOUNDER'S GROUP

The by-laws authorize the board for a limited period of time to excuse from examination practitioners of preventive medicine or public health who have attained unquestioned eminence in the field. This has been so defined as to include professors and associate professors of preventive medicine or public health in medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association or in schools of public health accredited by the American Public Health Association, or individuals who have been or are president of one of the sponsoring societies designated in the certificate of incorporation, or have had at least ten years of distinguished service in the field of public health and are considered eligible by the board. Applicants for consideration as members of the Founder's Group must be received by July 1, 1950.

EXAMINATIONS

Examinations will be held from time to time and in various places depending on the need as indicated by applications received. It is expected that examinations will be held primarily in connection with the meetings of the American Public Health Association. The examination will consist of two parts:

Part one to consist of a comprehensive written examination designed to test the knowledge of the applicant in the general field of preventive medicine and public health. These examinations will be announced at least sixty days prior to the holding of the examinations. The written examination will be confined to one day.

Part two to consist of the oral or practical examination which will be held on the day following the written examination. This examination will be held before two to four examiners, members of the board or associate examiners. An endeavor will be made to adapt the details of the oral examination to each candidate's experience and practice. The examiners will report orally on each candidate to the assembled board, after which the results of the examination will be considered jointly by the entire board and the examiners. Final action of the board will be based on the candidate's ethical and professional record, training and attainments as well as on the results of his formal examination.

APPLICATIONS

Each application for examination for certification shall be in writing signed by the applicant and shall be filed with the secretary not less than ninety days prior to the date of the examination. Application must be on prescribed application forms. The *application must be accompanied by an application fee and two* recent, clear, unmounted, autographed photographs of the applicant.

FEES

The board is incorporated as a nonprofit corporation and no member of the board may receive any compensation. Minimum fees are specified, consistent with the cost of examination and certification. The total cost to the applicant is $50.00.

Application fee, $15.00. No application can be considered for classification and action by the eligibility committee unless accompanied by the application fee. The application fee is not refundable.

Certification fee, $35.00. This fee is payable when the candidate is notified of acceptance for examination or as a member of the Founder's Group. It is not returnable after the candidate has been officially accepted and notified by the eligibility committee to report for examination. All applications must be on the standard form and accompanied by the necessary documentation. No member of the board is authorized to give informal opinions as to the eligibility of the candidates. The determination of eligibility will be made only by the eligibility committee after receiving full application information. All candidates must comply with board regulations in effect for the year in which the examination is taken, regardless of when the original application was filed. Applicants declared ineligible for admission to examination may reopen their applications within two years of the filing date, without payment of an additional application fee. Applicants declared eligible but who fail to exercise the examination privilege within three years of the filing of the application are required to file a new application and to pay a new application fee.

CERTIFICATION

On satisfactory completion of the examinations or in the case of the Founder's Group, on the affirmative vote of the board, a certificate will be issued to the effect that the person named has been found to be possessed of the special knowledge in preventive medicine and public health. This certificate will be signed by the officers of the board and shall have its seal affixed. Each certificate shall remain the property of the corporation, but each person to whom a certificate is issued shall be entitled to its possession until revoked. Any certificate issued by the board may be revoked if evidence, satisfactory to the board, is presented that the applicant was not eligible at the time of application, or made any misstatement or misrepresentation of facts or that his license to practice medicine has been suspended or revoked.

AMERICAN BOARD OF PROCTOLOGY

Curtice Rosser, President, Dallas, Tex.
George H. Thiele, Vice President, Kansas City, Mo.
Louis A. Buie, Secretary-General, 102-110 Second Ave., S.W., Rochester, Minn.
Garnet W. Ault, Washington, D. C.
Harry E. Bacon, Philadelphia.
Walter A. Fansler, Minneapolis.
Louis J. Hirschman, Detroit.
Louis E. Moon, Omaha.
Marion G. Pruitt, Atlanta, Ga.
R. A. Scarborough, San Francisco.

The American Board of Proctology announces that it is preparing a booklet which will contain information pertaining to the requirements for eligibility, prerequisites, special training and clinical experience of candidates. The types of examinations, classes of certification, fees and other phases of its proposed activities will be delineated. This booklet will be completed within a short time and will be sent to those who have sent inquiries to the secretary general.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.

John C. Whitehorn, President, Baltimore.
H. Houston Merritt, Vice President, New York.
Francis J. Braceland, Secretary-Treasurer, 102-110 Second Avenue, S. W., Rochester, Minn.
David A. Boyd Jr., Associate Secretary, Rochester, Minn.
Spafford Ackerly Louisville, Ky.
Bernard J. Alpers, Philadelphia.
Kenneth E. Appel, Philadelphia.
Percival Bailey, Chicago.
Louis J. Karnosh, Cleveland.
Roland P. Mackay, Chicago.
Frederick P. Moersch, Rochester, Minn.
George H. Stevenson, London, Ontario.
S. Bernard Wortis, New York.

APPLICATION FOR CERTIFICATES

An application, in order to be considered at any meeting of the board, must be in the hands of the secretary of the board not less than ninety days before the date of such meeting. A proper application form may be obtained from the secretary. Application may be made for certification in psychiatry or in neurology or in both fields. Applications will be formally considered only when made on the official application blank in such form as may be adopted from time to time by the board and when accompanied by an application fee in such amount as may be fixed by the board.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire board at a meeting held for such certification.

FORM OF CERTIFICATION

There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certifications shall be in such form as is approved by the Board of Directors.

GENERAL REQUIREMENTS FOR APPLICANTS

Each applicant for a certificate must establish that:

(*a*) He is a physician duly licensed by law to practice medicine.

(*b*) He is of high ethical and professional standing.

(*c*) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(*d*) He has received adequate training in psychiatry or neurology, or both, as a specialty.

CLASSES OF APPLICANTS

Class A.—Applicants who graduated from an approved medical school before the foundation of the board (1934) will not be held to the strict interpretation of the published requirements in formal graduate training. Under such circumstances the board will consider the training and experience of the applicant and decide whether or not he will be admitted to the examination.

Class B.—Applicants who graduated from an approved medical school after 1934 shall fulfil the following requirements.

PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States and Canada, such training must be satisfactory to the aforementioned Council.
2. Completion of a year's internship approved by the same Council in general medicine, general surgery, pediatrics or a rotating internship.
3. The nine month wartime internships will be accepted as an equivalent of one year.

SPECIALIZED TRAINING

Admission to the examination for certification in psychiatry or neurology requires a total of five calendar years of training and experience, three years of which must be specialized training obtained in approved training centers, plus two years of experience. Admission to the examination for certification in both psychiatry and neurology requires a total of six calendar years of training and experience, five years of which must be specialized training obtained in approved training centers, plus one year of experience. The specialized training may be subdivided into two and one-half years each in psychiatry and neurology or three years in one subject and two years in the other. The required years of experience should be spent in clinical practice with major responsibility for the care of patients.

This training for psychiatrists should include clinical work with psychoneurotic and psychotic patients, combined with the study of basic psychiatric sciences, medical and social psychology, psychopathology, psychotherapy and the physiological therapies, including a basic knowledge of the form, function and pertinent pathology of the nervous system. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training period should include instruction in the psychiatric aspects of general medical and surgical conditions and the behavior disorders of children and adolescents sufficient to develop practical ability to direct the treatment of such conditions. It should also include collaborative work with social workers, clinical psychologists, courts and other social agencies. The training program of the candidate for certification in psychiatry should include sufficient training in neurology to enable him to recognize and to evaluate the evidences of organic neurological disease.

The training for neurologists should be based on clinical work with adults and children with neurological disorders, including the neurological complications of medical and surgical conditions. This shall be combined with study of basic neurological sciences, neuroanatomy, neurophysiology, neuropathology and neuroroentgenology. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training should include sufficient training in psychiatry to enable the candidate to recognize and to evaluate the common psychiatric reactions.

The board offers the foregoing two paragraphs as an outline of desirable training. If, however, the candidate has evidence of equivalent qualifications of training and experience not in the pattern here formulated, this experience with appropriate documentary support may be included in his application for evaluation and possible approval by the board.

Candidates seeking certification in both neurology and psychiatry or supplementary certification in one after being certified in the other must submit evidence satisfactory to the board of an additional two years of full time basic training in the supplementary specialty.

Thus, no candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least six years of special training and experience in neurology and psychiatry for certification in both neurology and psychiatry.

The board will give not more than six months of credit for not less than six months of training in an approved training center for internal medicine or pediatrics in lieu of six months of experience to candidates for the certificate in psychiatry or neurology, but not to candidates for certification in both psychiatry and neurology.

The board will give credit for one year of training in child psychiatry provided it is the third year of the required three years of special training required by the board and providing it is taken in a center approved by this board for training in child psychiatry.

The lists of training programs approved by this board and by the Council on Medical Education and Hospitals of the American Medical Association may be found in the current issue of the Internship and Residency Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

The secretary may at his discretion admit to examination candidates who lack not more than two months of the time requirement for certification with the understanding that the certificate will in no case be issued until satisfactory written evidence of completion of this requirement is submitted to the board.

TRAINING IN THE ARMED FORCES

Credit will be granted for one year of wartime military service in the Army, Navy, Public Health Service and Veterans Administration. Wartime to this board means Dec. 7, 1941 to Feb. 15, 1946. Further credit for specialized training will be granted only if the candidate has received training in an institution recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by this board. Time beyond one year spent in the above Government agencies may be credited to experience, providing the candidate has been regularly assigned to a service in neurology or psychiatry.

EXAMINATIONS

Date and places of examinations are set by the board at its discretion and are announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Diseases*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the competence of the candidates. The board requires some proficiency in neurology on the part of those it certifies in psychiatry, and vice versa, but examines the candidate in accordance with the certificate he seeks. The examinations will be of such type that no adequately trained person will fail and yet they will be sufficiently searching so that the specialist in fact may be separated from the specialist in name. The practical examination will include the examination of patients under the supervision of the examiner. The manner of examining patients, and the reasoning and deductions therefrom, will constitute an important part of the examination. Oral and practical examinations will be given in the basic sciences with special regard to their clinical implications. Written examinations may be given at the discretion of the board. The examination for certification in psychiatry will differ from the examination for certification in neurology.

PAYMENT OF FEES

The candidate on filing his application shall accompany it with an application fee of $25 which is not returnable. If a preliminary written examination has been decreed, an additional $25 fee will be required at the time of the applicant's acceptance. When notified by the secretary that he is eligible for the oral and practical examination, the candidate shall send the secretary an examination fee of $50. A candidate who has been certified in either psychiatry or neurology and who has been admitted to supplementary examination for the other certificate shall pay an additional examination fee of $50.

A candidate who has failed in one examination is eligible for reexamination within one year on payment of a reexamination fee of $25.

After the year has elapsed he must submit a new application and pay new application and examination fees. If he fails the reexamination, he may, after two years have elapsed, submit a new application and $25 fee, present evidence of further training and pay an examination fee of $50.

A candidate who fails in one or two subjects is eligible for reexamination in those subjects within one year on payment of a reexamination fee of $25. After the year has elapsed he must submit a new application and pay new application and examination fees and repeat the entire examination. If he fails the reexamination, he may apply again for the complete examination after two years on submission of evidence of further training and on payment of an application fee of $25. If admitted to the examination, he must pay a new examination fee of $50.

Any candidate who finds himself unable to attend an examination to which he has been admitted and does not notify the Secretary at least six weeks before the date of the examination will forfeit half of his examination fee. Any candidate who fails to appear for examination within a period of three years following the date of notification of eligibility for examination shall be required to submit a new application and pay the attendant fee. If a candidate dies before his certificate is issued, all fees will be returned to his estate.

AMERICAN BOARD OF RADIOLOGY, INC.

I. H. LOCKWOOD, President, Kansas City, Mo.
DOUGLAS QUICK, Vice President, New York.
B. R. KIRKLIN, Secretary-Treasurer, 102-110 Second Avenue, S.W., Rochester, Minn.
RALPH S. BROMER, Bryn Mawr, Pa.
RAY A. CARTER, Los Angeles.
D. S. CHILDS, Syracuse, N. Y.
L. H. GARLAND, San Francisco.
ROSS GOLDEN, New York.
E. L. JENKINSON, Chicago.
H. DABNEY KERR, Iowa City.
F. W. O'BRIEN, Boston.
J. W. PIERSON, Baltimore.
U. V. PORTMANN, Cleveland.
LEO G. RIGLER, Minneapolis.
B. P. WIDMANN, Philadelphia.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges or license to practice radiology. Certificates of the board shall be issued on one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.
2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (*a*) roentgenology; (*b*) diagnostic roentgenology; (*c*) therapeutic radiology.

DEFINITIONS

For the purposes of this Board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.
2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.
3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.
4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

A. General Qualifications

1. Satisfactory moral and ethical standing in the profession.
2. A license to practice medicine in the state or county in which he resides.
3. Membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as herein provided, membership in other societies shall not be required.
4. That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under "definitions," and that he devotes his time primarily and principally (at least 75 per cent) to the practice of radiology or one of its branches.
5. That he is a citizen of the United States or Canada. Candidates from other countries must be permanent residents of that country and native citizens thereof.

B. General Professional Education

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. If the applicant is a resident of the United States or one of its possessions and is a graduate of a medical school outside the United States or Canada, he must have a certificate of the National Board of Medical Examiners.
2. Completion of an internship of not less than one year in a hospital approved by the same Council.

C. Special Training

1. After completion of the internship there shall be a period of special training in Radiology of not less than three years in clinics, hospitals or dispensaries recognized and approved by the American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in radiology. This period of specialized training shall include:

(*a*) Graduate training in pathology, radiation physics and radiobiology. A period of six months full time training in pathologic anatomy is recommended but, where this is not possible to arrange, the student during his three year training period may, by attending pathologic conferences, postmortem examinations and studying removed tissues, receive adequate training in pathology. It is recommended that radiation physics be taught by a combination of didactic lectures, practical examples and direct clinical demonstrations.

(*b*) An active experience (residency) of not less than twenty-four months in an institution, the radiologic department of which is recognized and approved by the American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as capable of providing satisfactory training.

(*c*) Examination in the basic sciences of radiology as well as the clinical aspects thereof. These examinations should be given by the student's instructors in order to allow those responsible for his training to certify to the board that he is adequately prepared.

In the current emergency the Board will allow one year of military service spent in a radiology department in the United States Army, Navy or Marine Corps to be applied toward the satisfaction of one year of graduate training.

At its annual meeting in Chicago in June 1948 the board decided to grant credit for preceptor type training provided the candidate first spends two years in an approved x-ray department on a formal residency basis. Then the board will give credit for two years' preceptorship in lieu of the third year of residency training provided the preceptor is acceptable to the board. This program is now in effect.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs and the fee of $50 at least two months before the date of the examination.

FEE

A fee of $50 must accompany each application blank. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in the first examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination and pay an additional fee of $25. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $50.

A candidate having failed twice may, after one year has elapsed, file a new application which must be accompanied by the fee of $50.

AMERICAN BOARD OF SURGERY

Warfield M. Firor, Chairman, Baltimore.
Warren H. Cole, Vice Chairman, Chicago.
J. Stewart Rodman, Secretary-Treasurer, 225 S. Fifteenth Street, Philadelphia.
William DeW. Andrus, New York.
Isaac A. Bigger, Richmond, Va.
Lawrence Chaffin, Los Angeles.
Peter Heinbecker, St. Louis.
Thomas H. Lanman, Boston.
Leland S. McKittrick, Boston.
Robert M. Moore, Galveston, Texas.
John H. Mulholland, New York.
Frederick L. Reichert, San Francisco.
Calvin M. Smyth, Philadelphia.

REQUIREMENTS

The requirements for all candidates will be as follows:

General Qualifications

1 .Moral and ethical standing in the profession satisfactory to the board.

The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Those whose activities are limited 100 per cent to the practice of surgery. This includes diagnosis, preoperative and postoperative care. It does not include obstetrics without surgical complications, or the general practice of medicine.

PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by the board.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board. This internship may be rotating or one devoted to a single branch of medicine as, for example, surgery, medicine, pathology.

SPECIAL TRAINING

Candidates who have the following requirements will be eligible for consideration by the board:

Group I[1]—Four years of education in surgery in a graded residency in one or more institutions. The training programs of hospitals must be approved by an appropriate committee of the board, in addition to the approval of the hospital for graduate training by the Council on Medical Education and Hospitals of the American Medical Association, or the American College of Surgeons. One year of the four may be in a subspecialty of surgery, such as thoracic, plastic, cancer or orthopedic surgery, proctology or gynecological surgery. If the second year of a two year internship is surgical and in a hospital approved for graduate training, it will be acceptable on the aforementioned four years.

Group II[2]—In lieu of the requirements for Group I, the board will continue to accept, for the present, three years of acceptable residency training, followed by two years of study or practice of surgery. The latter two years may be taken under one certified by the board and carrying on his practice in hospitals fully approved as meeting the minimum hospital requirements of the American College of Surgeons.

Each candidate must have three years' acceptable training in general surgery. It is desirable that the three years of acceptable residency training of Group II applicants precede the two years allowed in the study or practice of surgery, although this is not essential. Not more than two of the five years required of Group II applicants may be spent in the subspecialties of surgery, such as those listed above.

EDUCATIONAL REQUIREMENTS EFFECTIVE JULY 1, 1950

The educational requirements listed below become effective for all candidates after July 1, 1950. In the interim the board will continue to give credit for the training received in institutions that have residencies which are approved by the American College of Surgeons and the Council on Medical Education and Hospitals of the American Medical Association.

Group 1. In addition to one year of internship or its equivalent, a candidate must have a minimum of four years of training in surgery in an institution or institutions acceptable to the board. Three of these years must be spent in an approved residency or clinical fellowship. One year may be spent in a surgical specialty, or experimental surgery or research, or work of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology, biophysics and biochemistry to surgery is emphasized. The board does not insist that any special length of time be spent in the basic sciences, but knowledge of these sciences as applied to clinical surgery will be required in the examination. One year's credit, however, will be given to recognized graduate school courses in these basic sciences if such courses are an integral part of an acceptable university medical school. The board will not, however, give credit for any post-graduate course of less than six months' duration.

During these four years of training a candidate must:

1. Hold positions of increasing responsibility for the care and management of patients with surgical conditions.

2. Have sufficient operative experience to acquire surgical skill and judgment through the performance of surgical operations with a high degree of responsibility but under circumstances providing adequate opportunity for consultation and advice.

Group 2. The board realizes that there is not as yet an adequate number of four-year graded residences (Group 1) to meet the needs of the country for qualified surgeons. Therefore, the board will continue to recognize three years[3] of acceptable residency training, in one institution or institutions acceptable by the board, followed by two years of study or practice of surgery, during which time sufficient operative experience to meet the board's requirements must be obtained. The latter two years must be taken under the supervision of a surgeon certified by or acceptable to the board, and carrying on his practice in hospitals approved as meeting the minimum hospital requirements of the American College of Surgeons. Now more than two of the five years required by Group 2 applicants may be spent in the subspecialties of surgery.

At the completion of training the board will request responsible representatives of the institution in which the candidate has had the major portion of his training to attest to his character and professional competence, and to recommend that he be admitted to its examinations. This requirement is applicable to candidates in both groups.

After July 1, 1950, approval will be given for experience obtained in institutions having training programs of less than three years only when such a program is affiliated with and forms an integral part of an accepted graded residency.

BASIC SCIENCES

This entire period of special training shall be of such character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized.

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[1] A graded residency includes a period of training in which the trainee has increasing responsibility for the care and management of surgical patients. Adequate operative experience in which the candidate has assumed the whole responsibility will be required.

[2] An acceptable residency is one approved for graduate training in surgery by the American College of Surgeons or the Council on Medical Education and Hospitals of the American Medical Association.

[3] When a candidate receives his training in more than one institution, it is imperative that he hold positions of increasing responsibility.

The board does not insist that any special length of time be spent in the basic sciences, but knowledge of these sciences as applied to clinical surgery will be required in the examination. One year's credit, however, will be given to recognized graduate school courses in these basic sciences which are an integral part of an acceptable university medical school. The board does not recognize short postgraduate courses for credit on the five years required of Group II candidates.

As a rule, not more than six months' credit is allowed for one year or more spent in any one of the basic sciences unless the candidate can show evidence of special training during this period, such as research, teaching, and so on, directly under the supervision of, and an integral part of an acceptable institutional training program in surgery. Under no circumstances, however, will more than one year's credit be given for work in the basic sciences.

MILITARY CREDIT

Candidates who were on active duty in the armed forces for one to two years and who entered these services prior to V-J Day (Aug. 15, 1945) will be given one year military credit. Additional military credit may be allowed, at the board's discretion, during the war emergency (six months after V-J Day, or Feb. 15, 1946) if the candidate furnishes evidence of adequate surgical experience on a suitable surgical service under acceptable supervision. In no instance, however, will the board give full credit for military service during the war emergency. Maximum credit will be limited to two years for such service. Subsequent to Feb. 15, 1946, credit for military service will be given on the same basis as in civilian training as described elsewhere. Credit for military service may be applied to the residency requirement as outlined for Group II candidates, but military credit is not allowed for Group I candidates.

REQUIREMENTS FOR FOREIGN BORN AND FOREIGN TRAINED APPLICANTS

Full citizenship status is required of residents of the United States. United States citizens who are residents of other countries, and citizens of other countries must have completed at least the three year residency training requirements in a hospital in the United States. In addition, they are required to hold a license to practice surgery in the country in which they are resident or hold citizenship.

APPLICATIONS

Prospective candidates considering themselves eligible for examination should submit a letter to the board's office outlining briefly, in concise and chronological order, their qualified training since graduation from medical school. If the prospective candidate's letter appears to meet the minimum requirements, an application form will be mailed to the candidate for completion. The processing of the completed application by the board's office and the Examination Committee requires a minimum of three months. The candidate will then be notified by the Secretary as to his acceptability for examination, his deferment or ineligibility.

The eligibility of candidates whose training in some respects does not conform to requirements published above will require the action of the Examination Committee, which may postpone the candidate's notification of acceptability. Every candidate's final acceptability for examination is based not only on the evaluation of his training qualifications, but on recommendation by the board's advisors as to his professional ability as a surgeon, his ethical standing in the community and the strict limitation of his work to surgery.

THE FOUNDERS GROUP

The Founders Group, to which were admitted those who had already amply demonstrated their fitness as trained specialists in surgery, was closed in January 1940.

EXAMINATIONS

The qualifying examination will be divided into Part I (written) and Part II (clinical, bedside and laboratory). In both of these parts, as previously stated, a knowledge of the practical application of the sciences fundamental to surgery will be required.

Part I. This examination will be given simultaneously in as many centers throughout the country as the board may determine suitable for the purpose, and is held twice a year, in the Spring and Fall. All applications must be on file in the board's office at least three months in advance of the examination. Candidates who are declared eligible are given ample notice as to the center to which they have been assigned for examination.

The examination in Part I is written and covers a one day period. There shall be two sessions of three hours each. The examination concerns itself primarily with general surgical problems and in addition the application of the basic sciences of surgery to these problems.

Part II. In order to be eligible for Part II, a candidate must have successfully passed Part I. In addition, the board requires that a satisfactory operative report must be filed for every candidate prior to his examination in Part II. Such a report shall be made by a member of the board, Founders Group, or one certified by examination, designated to be present during a major operative procedure performed by the candidate.

Part II of the examination shall be oral and practical and cover a one day period, the schedule being arranged somewhat as follows:

9 A. M.–1 P. M.—Clinical surgery (diagnosis, management and the application of physiology, biochemistry and bacteriology, as the case being examined on may offer an opportunity for doing so. Roentgenographic interpretation will also be included).

2-5 P. M.—Applied Anatomy and Surgical Pathology.

The board expects that every candidate shall be well prepared in applied anatomy. In surgical pathology more stress is laid on the gross than on the microscopic, although candidates are expected to recognize the less difficult microscopic slides showing examples of frank malignancy, tuberculosis, inflammation, and so on.

Examinations in Part II are conducted in certain centers of the country selected by the board. It is the board's desire to arrange these centers so as to geographically meet the needs of the candidates, on condition that suitable examination facilities can be provided. Examinations in Part II are conducted by members of the board living in the region of the country in which they are held, together with selected members of the Founders Group resident in the centers chosen.

GRADES

A candidate must receive an average of 75 per cent for each part to be entitled to the board's certificate.

A candidate who fails in his examination in Part I shall have his papers reviewed by the Examination Committee.

REEXAMINATIONS

Part I. Candidates who fail Part I are required to wait one year before becoming eligible for reexamination.

Part II. Candidates who fail Part II in its entirety and those who fail in the single subject of clinical surgery are required to wait one year before establishing eligibility for reexamination. Those who fail either anatomy or pathology are required to wait six months. The board expects that during this period the candidate will make a reasonable effort to prepare himself in the subject or subjects in which he has failed.

Should a candidate fail one examination in parts I and II, further examination privileges will be decided in each individual instance by the Examination Committee, but only after the candidate has submitted satisfactory evidence of further substantial preparation. The board may, for good and sufficient reason, deny a candidate the privilege of further reexamination.

FEES

The fee for the examination is $100.00, payable as follows: $10.00 registration fee, $30.00 for Part I and $60.00 for Part II.

Candidates shall be required to pay a fee of $30.00 for reexamination in Part I and $60.00 for reexamination in Part II.

This board is a nonprofit organization. All fees will be used, after a reasonable amount is set aside for necessary expenses in maintaining its office, conducting examinations, and so on, to aid in improving existing opportunities for the training of the surgeon.

CERTIFICATE

After meeting the requirements for eligibility and passing the examination, a certificate attesting to a candidate's qualifications in surgery will be issued by the board, signed by its officers.

BOARD OF THORACIC SURGERY

(A Subsidiary Board of the American Board of Surgery)

CARL EGGERS, Chairman, New York.
CAMERON HAIGHT, Vice Chairman, Ann Arbor, Mich.
WILLIAM M. TUTTLE, Secretary-Treasurer, 1151 Taylor Avenue, Detroit 2, Mich.
WILLIAM E. ADAMS, Chicago.
FRANK E. BERRY, New York.
BRIAN B. BLADES, Washington, D. C.
THOMAS H. BURFORD, St. Louis.
MICHAEL E. DEBAKEY, Houston, Tex.
EMILE HOLMAN, San Francisco.
GEORGE H. HUMPHREYS, New York.
RICHARD HARWOOD SWEET, Boston.

FUNCTIONS OF THE BOARD

1. To select Founder Members. This group is composed of surgeons, who have made meritorious contributions to thoracic surgery, as follows:

a. Active and senior members of the American Association for Thoracic Surgery, who have been certified by the American Board of Surgery, are eligible for consideration as Founder Members.

b. Other surgical members of the American Association for Thoracic Surgery will have their records reviewed by the board, and may be recommended for Founder Membership with or without application.

c. Other surgeons, certified by the American Board of Surgery, who on application, and after review of their qualifications, are found to meet the requirements of the thoracic board.

The Founders Group will be kept open for two years after the organization of the board.

2. To conduct examinations of satisfactory candidates who seek certification by the board.

3. To improve the opportunities for the training of thoracic surgeons.

4. To set up principles of education to guide young surgeons who desire to prepare themselves for proficiency in thoracic surgery.

5. To issue certificates of qualification to all those meeting the board's requirements.

REQUIREMENTS

1. Certification by the American Board of Surgery.

2. Two years' training in thoracic surgery approved by the Board of Thoracic Surgery, or meritorious contributions to thoracic surgery. One of these two years may be spent during the four years of training in surgery required by the American Board of Surgery.

3. Written, oral and practical examination.

DEFINITION

To qualify for the examination in thoracic surgery, the candidate shall have had two years of training in an active, well-integrated thoracic surgical clinic or clinics, or the equivalent amount of thoracic surgical training, on a mixed service consisting of thoracic and nonthoracic surgical cases. Adequate training in both the tuberculous and nontuberculous aspects of thoracic surgery is expected. In order to obtain this objective, combined residencies between institutions of different types may be advantageous. It is also required that the candidate be familiar with the basic sciences as related to thoracic surgery. Under exceptional circumstances certain surgeons may, by virtue of recognized proficiency in the surgical treatment of thoracic diseases, qualify for the examination at the discretion of the board.

APPLICATIONS

Prospective candidates desiring to apply for examination should consider whether they are able to meet the minimum requirements of the board. They should then submit a letter to the secretary's office, outlining briefly their training and experience in thoracic surgery and ask for an application form. An application form will not be sent unless evidence is submitted in a letter indicating that the prospective applicant appears to meet the minimum requirements.

EXAMINATIONS

The Board of Thoracic Surgery will be governed in general by the rules laid down by the American Board of Surgery pertaining to examination, as well as reexaminations.

Rules may be changed, however, at the discretion of the Board of Thoracic Surgery.

FEES

Founders Group. To those who will be admitted to this group, a certificate will be issued. The fee will be $50.00.

Group to be certified by examination. For the special examination in thoracic surgery and the issuing of a certificate, the fee will be $100.00. Fifteen dollars of this fee is to accompany the application and will be considered as a registration fee. It is nonreturnable to the applicant in case he is disapproved for examination.

Reexamination. The fee for reexamination will be $25.00.

AMERICAN BOARD OF UROLOGY, INC.

GILBERT J. THOMAS, President, Beverly Hills, Calif.
GEORGE F. CAHILL, Vice President, New York.
HARRY CULVER, Secretary-Treasurer, 7935 Sunnyside Road, Minneapolis 21.
GEORGE GILBERT SMITH, Brookline, Mass.
EDGAR BURNS, New Orleans.
CHARLES C. HIGGINS, Cleveland.
A. I. DODSON, Richmond, Va.
GRAYSON CARROLL, St. Louis.
THOMAS D. MOORE, Memphis, Tenn.

APPLICATION BLANK; REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special form. This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by $35 of the examination fee.

Requirements for Applicants.—Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state or province in which they propose to practice medicine, the certificate of the National Board of Medical Examiners and/or the certificate of graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association as capable of providing training comparable with that recognized in a "Class A" medical school.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of urology.

The training requirements after the internship may be fulfilled in one of the following ways.

(*a*) A three year residency in urology.

When a resident obtains a senior rating or is in his final year of training, he should be in charge of the examination and treatment (surgical or otherwise) of an ample number of patients under the supervision of the senior consultant or attending urologist, who must be certified by the American Board of Urology.

(*b*) A second year of rotating internship or a one year residency, preferably in general surgery, followed by a two year urologic residency, which should have the same status as the last two years of a three year urologic residency.

(*c*) Preceptorship.

This type of training may be accepted, but it is not encouraged.

This, and other variations from training described above, must be supported by evidence that the candidate has had training comparable with one of the two preceding types of residencies.

2. An additional period of not less than two years in the practice of urology in the city from which he makes application.

C. Make application to The American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character.

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged.

E. Membership in the American Medical Association or comparable national medical association is recommended.

FEE

The examination fee is $100 (this fee will be increased when the expense of the examinations and other activities of the board demand). Thirty-five dollars must accompany the application. If, on investigation, an applicant is found lacking in any of the requirements stated herein, he will be notified that he is ineligible for examination. Sixty-five dollars must be paid when the applicant is accepted as a candidate for certification. Neither fee shall be returnable in any event.

If a candidate fails, he will be permitted a second examination after one year or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application and pay a second fee.

REQUIREMENTS FOR CERTIFICATION

According to the by-laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary.

The requirements for certification include: personal appearance before the board; preparation of reports of fifty major urological cases, under the candidate's own supervision, which must contain all items essential for diagnosis, therapy and prognosis and results of treatment; oral-clinical examinations, and written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS; REPORTS OF CASE HISTORIES

Oral-Clinical and Pathology, given once a year, usually in February and usually in Chicago, Illinois. Basic sciences, given about ninety days before the February meeting. This examination is given in various cities throughout the country and is proctored by certificatees of the board.

Definite appointments for the examinations will be assigned after candidates have fulfilled other requirements.

The written examinations are designed to test the candidate's preparation in, and his knowledge of, the whole field of urology, including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. The examination in pathology will consist of the identification of gross specimens and sections of tissue observed through the microscope. The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

The oral-clinical examination will consist of discussions of common urological conditions. The subjects forming the basis of this examination are urography; diseases of the genital organs, including the prostate; diseases of the urinary bladder and diseases of the ureters and kidneys. The examination may deal directly with data found in the reports of case histories that the candidates have submitted. It will ascertain the candidate's familiarity with recent literature, the breadth of his clinical experience and his general qualifications for practice in the specialty of urology.

The professional adaptability of each candidate will be investigated in an attempt to determine his ethical conduct and his attitude toward his patients and fellow practitioners.

The reports of 50 major urological cases must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Twenty-five of the case histories may come from a candidate's final year of training. The second twenty-five, making the total of fifty required, must come from the candidate's practice. All cases must be concerned with patients on whom the candidate has done the operative procedures. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made. The histories should be examples of the various types of major urologic surgery. These should represent renal, ureteral bladder, and a genito-urinary surgery.

Case reports that are copied verbatim from a hospital record are not accepted. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten on 8½ by 11 paper and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed.

The board requires that all of the essential points of the history and examination, as well as a complete description of the surgical procedure, shall be given. Emphasis should be placed on the following items: preoperative diagnosis, clinical and pathological diagnosis, laboratory data, including cultures of urine and chemical analysis of calculi; summary of postoperative course with special reference to morbidity, clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case. This must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists must accompany the reports. If the reports are obtained from more than one hospital they must be consecutive and a separate index list of each group should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number and the dates of operation. Statements from the superintendents of the hospitals attesting that the candidate was the operator must be included. The lists will be filed in the secretary's office for verification purposes.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretation of urograms.

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his competence as a urologist.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others.

Case reports must be submitted to the secretary of the board by September 1.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

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Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, SEPTEMBER 3, 1949

NOTE.—Because of the extensive material required for medical education in this issue of THE JOURNAL, several of our regular departments are omitted.—ED.

THE FORTY-NINTH ANNUAL REPORT ON MEDICAL EDUCATION

The forty-ninth annual report of the Council on Medical Education and Hospitals which appears in this issue of THE JOURNAL summarizes basic data concerning medical schools and students in the United States and Canada and contains other significant information on medical education.

The freshman class that entered medical school in the fall of 1948 was the largest ever admitted to the medical schools of the United States. Preliminary reports from the schools indicate that the 1949 freshman class will be even larger by some 200 students. Part of the increase results from an increase in the number of approved schools. Moreover, the facilities of several existing schools have been expanded and the schools are accepting as many students as they can accommodate without a serious lowering of standards.

On the basis of the new schools that are already being organized and the expansion of existing schools that is now under way, the freshman class in the medical schools of the United States will shortly exceed 7,000 students. The average size of the freshman class in the ten years preceding the war was 6,016. Thus a significant increase is occurring in the facilities for medical education in this country. This increase is gradual and is developing without the lowering of standards that would inevitably have resulted if the medical schools had abruptly enrolled a large number of additional students. Such an event might have hastened by three to five years an increase in the number of graduates, but lowering of the standards of medical education and of the quality of medical care would have been certain. Experience has demonstrated that proper facilities for medical education, including staff, laboratories and hospitals, cannot be developed on short notice.

Final plans have been completed for the survey of medical education in the United States sponsored by the Council on Medical Education and Hospitals and by the Association of American Medical Colleges. Visits to the medical schools will begin this month. Teams composed of two or three men will spend five to ten days at each of the medical schools in the United States during the next two years. The report of the Council outlines the fourteen major aspects of medical education on which this comprehensive survey will concentrate.

The analysis this year, for the first time, of certain basic data for the medical schools grouped according to whether they are publicly or privately owned is particularly interesting. During the past year, of the seventy-eight approved medical schools and schools of the basic medical sciences in the United States, forty-four were owned by private nonprofit corporations and thirty-four were owned by states or municipalities. Of the total of 23,670 medical students in the United States during the past academic year, 59.7 per cent were enrolled in private schools and 40.3 per cent in governmental schools. Graduates during this period numbered 5,094, of whom 61.8 per cent were from private schools and 38.2 per cent from publicly owned schools. During the coming academic year three of the privately owned medical schools, Syracuse, Long Island and Southwestern, will become part of state university systems, thus increasing the number of publicly owned schools to thirty-seven and reducing the number of privately owned schools to forty-one.

During and after the war almost all medical schools experienced difficulty in finding qualified men to fill vacant or newly created positions on their instructional staffs. As of June 1949 the medical schools reported that they had 240 unfilled full time positions in their preclinical departments and 201 in their clinical departments. The inability of the medical schools to fill about 10 per cent of the total number of full time positions that they have available is concrete illustration of the problem that faces the schools in attempting to increase their enrolments and maintain standards.

THE DEAN OF A MEDICAL COLLEGE—A JOB ANALYSIS

During the period 1945-1949 sixty-three new deans have been appointed by forty-five of the seventy-eight medical and basic science schools in the United States. This rapid turnover in deanships has aroused comment. The view has been advanced in some quarters that the task of heading a medical school has become so difficult and frustrating that few men are willing to cope with the problems for more than a short time. However, obvious explanations exist for most of the changes. The majority of new appointments have been necessitated by extramural or intramural promotions, by deaths and by retirements for age.

Evidence is available, however, to indicate that the demands made of deans are becoming heavier. In an increasing number of schools, the deanship is coming to be regarded as a full time job and the dean is not expected to carry major responsibilities in teaching, practice or research.

An adequate definition of the responsibilities of the dean reveals a formidable list of duties. The dean is the one person in the university and the medical school whose chief concern is the welfare of the medical school as a whole. Standing midway between the departments of the school and the university, the dean must provide the leadership in both the university and in the medical school that will enable the school to make its maximum contribution to education, to the advancement of knowledge and to the health of the community. To fulfil this role of leadership, the dean must be able to judge what constitutes good medical education, medical research and medical care. To this must be added a thorough knowledge of his own school and a critical evaluation of its resources. The dean is then prepared to work with the faculty in planning a program that will make maximum use of these resources without overtaxing them in an effort to meet all demands or to compete with other schools.

Once such a plan has been formulated, the dean must interpret to the university administration the school's needs and potentialities. Unless the dean is successful in gaining the university's support for a well defined program that meets both the immediate and long range needs of the school, the medical school has difficulty in progressing.

If the faculty has been carefully selected, the dean's responsibility in dealing with the individual departments may consist chiefly of promoting cooperation and of judiciously weighing their demands in relation to the needs of the school as a whole. In schools where the faculty is less capable, the dean must frequently seek to inspire, guide and encourage the individual departments to improve and develop their own programs in keeping with advancing ideas in medical education, research and community service. Leadership in planning the curriculum is an important responsibility of the dean. Most faculty members are intensely interested in the courses offered by their own departments. To the dean falls the difficult task of gaining the cooperation of all departments in keeping the entire curriculum continually abreast of changing values in medical science and medical education.

The authority resting in the deans for the selection of new faculty members varies. One of the most important responsibilities of the dean is to exercise all the authority he possesses so that the best available men are selected whenever new appointments are made.

The students look to the dean to help them acquire an understanding of their broad relations to the school, to the science of medicine and to the profession. The dean has the important responsibility of assisting in the development of standards for the selection of students. Further, it usually falls to the dean to see that the school retains its interest in the alumni so that the alumni will maintain their interest in the school.

The dean must be skilled in matters of finance. In several schools the budget which the dean administers exceeds a million dollars. In every school it amounts to several hundred thousand dollars. The dean not only must supervise the careful and economical spending of these funds but is usually expected to raise a substantial portion of the total. To their medical school responsibilities many deans must add the task of administering a large teaching hospital.

Several universities now have central departments that supervise the maintenance of the buildings and grounds, but in some schools the dean still counts the supervision of the janitors, the firemen and a small corps of mechanics among his direct responsibilities.

Much of the dean's time is spent in stimulating cooperation between the medical school and other departments of the university. Even more time is devoted to promoting and improving the school's relations with the general public, affiliated hospitals, philanthropic foundations, local, state and federal agencies of government and other organizations.

Most deans consult frequently with the local profession and with community health agencies to determine what contributions the medical school can make to their activities. Occasionally deans may not appear to be fully sympathetic with the problems of the profession. Incidentally, of the one hundred and three men who have been presidents of the American Medical Association at least thirteen served as deans.

The dean of a medical school must be an outstanding leader and be competent and skilled in many fields. Obviously, therefore, medical schools occasionally will experience difficulty in finding a suitable dean. The explanation of the growing fashion among universities to entrust their medical schools to vice presidents may, in part at least, lie in a feeling that it is easier to fill a position which has not yet taken definite shape or meaning than to persist in seeking a man who can satisfactorily perform all the varied functions that have become so firmly attached to the deanship.

GEOGRAPHIC RESTRICTIONS IN ADMISSION TO MEDICAL SCHOOLS

The report of the Council on Medical Education and Hospitals in this issue on the states or countries of origin of freshman medical students indicates that a number of medical schools, particularly those supported by states and municipalities, are limiting admissions more and more closely to residents of the state in which the schools are located. During the past year thirteen schools did not admit out-of-state students and five other schools admitted only one or two nonresidents. Only twenty-one schools admitted more nonresident than resident students.

In the last prewar year out-of-state students constituted 17.4 per cent of the freshman enrolments in the state and municipal schools. During the past academic year the percentage of nonresident students in the freshman classes of these schools was only 8.2 per cent. In the privately owned schools the percentages of out-of-state freshman students for these years were 52.9 per cent and 50.9 per cent, respectively.

While tax-supported institutions might well be expected to render service chiefly to the community that supports them, the exclusion of all nonresident students may not be a real service to the community. The practice definitely narrows the potential area from which a school may seek support. Students who attend such schools do not experience the stimulation and broadening influence of association with students who have different geographic and educational backgrounds. A most serious consequence of this policy is denial of admission to superior out-of-state applicants in favor of less well qualified residents. As a result the quality of the medical profession is lowered particularly in the states that follow such a short-sighted policy. The logical extension of this policy is exclusion from schools in other states of students from states in which medical schools exclude nonresidents. Again the ultimate effect is reduction of the quality of the medical profession in the states concerned.

If all medical schools could make available to well qualified out-of-state students between 10 and 20 per cent of the places in their entering classes, the community which supports them would be better served. The limitations already imposed on an appreciable number of schools and the expectation that the number of schools affected will increase rather than decrease make urgent action by the faculties, deans and presidents of the universities concerned toward persuading the governmental bodies to which they are responsible that a more liberal policy of admissions is in the best interest of the school and the community. Unless this problem can be solved satisfactorily at the local level, strong pressures will be applied at higher levels to dictate admission policies to the schools. Thus, the bill for federal aid to medical schools now pending before the Senate provides, "No payments may be made to any school unless such school has filed an application therefor . . . which contains adequate assurance, as determined by the Surgeon General that such school provides and will provide reasonable opportunity for the admission of out-of-state students."

Medical schools and their parent universities have been practically unanimous in declaring that they do not want federal funds if such funds are to be accompanied with federal interference in the administration of the schools. Unless the responsible administrators of the medical schools can secure authority to adopt more liberal admission policies, the type of interference to which they are so strongly opposed will be sure to come.

CONTINUING EVOLUTION OF THE INTERNSHIP AND RESIDENCY

The internship and residency are well established as essential parts of a physician's education. The development of recognition of the internship as essential dates back some forty years and that of the residency a little more than twenty years. The principles governing these types of training are still in a state of evolution. This issue of The Journal presents two statements of important changes that have recently taken place in the internship and in residency training.

The latest revision of the Council on Medical Education and Hospitals' "Essentials of an Approved Internship" is published in full in the report of the Council. These revised essentials were discussed in detail in an earlier number of The Journal.[1] A new and important feature of the essentials is the statement that the Council believes that a well organized rotating internship is likely to provide the best basic training for either the future general practitioner or the specialist. Prior to the development of residencies in the specialties, many recent graduates who intended to specialize selected "straight" internships because they provided the only opportunity for intensive hospital training in a specialty. Today practically every physician intending to specialize has residency training for two years or more in his chosen field. The prospective specialist need therefore no longer look to the internship as the primary opportunity for advanced training. On the contrary, in view of the prolonged and intensive period of training in a special field that is provided by the residency, many evident reasons appear for the broader type of experience provided by a rotating internship.

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[1] Editorial, J. A. M. A. **140**: 226-227 (May 14) 1949.

A principal reason that the "straight" internship retains its popularity is that the intern moves from one service to another so rapidly in many rotating internships that he never has an opportunity to become sufficiently acquainted with the clinical problems or procedures on any one service. The Council has recognized this defect; in its new essentials the Council states that assignment to a service in a rotating internship should be for not less than two months. Furthermore, assignments to medicine and general surgery are each to be of three months' duration. Thus five services are the maximum through which an intern can be rotated in a twelve month period. These new standards should improve the quality of rotating internships and increase their popularity.

The other announcement of importance is that the American Board of Surgery will give credit for residency training obtained after July 1, 1950, only when such training has been received in hospitals offering graded residencies of three or four years' duration. This new regulation of the Board reflects the growing belief that residency training should be organized so that the resident is given increasing responsibility and greater opportunities for advanced study and research as he progresses in his training. Some hospitals have offered such programs for many years. Many physicians now meet the educational requirements of the specialty boards, nevertheless, by taking a year of training in each of several hospitals with unrelated programs, with the result that they frequently work at the same level of responsibility throughout their entire training period. In certain respects residency training has developed in a manner similar to that of undergraduate medical education in the period before the introduction of the graded curriculum when students repeated the same courses for two or three consecutive years.

Insistence on graded training will probably not be made by all the specialties immediately. The new policy of the American Board of Surgery points the way to an important avenue along which future progress will be made in the development of residency training.

FEDERAL AID TO MEDICAL EDUCATION

S. 1453, which provides for assistance for the education of professional and other health personnel, was reported favorably on Aug. 3, 1949, to the Senate by the Committee on Labor and Public Welfare. The Committee unanimously approved the bill. S. 1453 may be voted on by the Senate before it adjourns.

The bill provides for federal subsidies to medical schools of $500 for each student enrolled up to the school's average past enrolment and $1,000 for each additional student. The number of students for whom the higher rate of $1,000 will be paid must not exceed 30 per cent of the past average enrolment. However, new schools can receive $1,000 for each student. Total payments to a school cannot exceed 40 per cent of the school's budget. Osteopathic schools would receive aid similar to that for medical schools. These subsidies are not scholarships, and federal scholarships will not be awarded if the schools are able to fill their enrolments.

The bill provides $5,000,000 annually for grants for construction of new schools for the health professions and for the improvement and expansion of existing facilities. These grants would be made by the Surgeon General of the Public Health Service after the importance of the requests were estimated. Representatives of the American Medical Association who appeared before the Senate committee stated that these grants for construction should not be made until the needs of all medical schools had been surveyed and a long range program carefully developed.

The bill, as reported, provides for a National Council on Education for Health Professions. This council would consist of the Surgeon General and the Commissioner of Education or his representative, as nonvoting ex officio members, and ten members not otherwise in the full time employment of the federal government who would be appointed by the President. The ten members would be leaders in the fields of health, science, education and public affairs, and three of them would be persons active in professional health education. The council would advise, consult with and make recommendations to the Surgeon General on matters of general policy and administration. It also would report to Congress by Jan. 1, 1952, its recommendations for a long range program of federal aid based on its surveys of financial and related problems of education for the health professions.

Funds under this bill would be provided for five years except for scholarship funds, which would extend over eight years.

The legislative committee of the American Medical Association believes that this bill should be vigorously opposed as long as it includes appropriation of tax funds to support schools of osteopathy. The medical profession cannot support a federal program of subsidization which would encourage and aid in the further development of cultist practice. The principles governing diagnosis and treatment in the practice of osteopathy are not based on valid scientific observations. For the protection of the public against unestablished methods of diagnosis and treatment of disease, the medical profession, in accordance with its principles of ethics, should make every effort to eliminate federal support of schools of osteopathy, as provided in S. 1453.

ORGANIZATION SECTION

Official Notes

AMA GROUP ARRIVES AT ANCHORAGE

A team of specialists sponsored by the American Medical Association held a refresher clinic at Anchorage, Alaska, July 19 to August 2. The course was sponsored by the American Medical Association, U. S. Air Force, and Alaska Native Service, Department of the Interior. The clinic was designed primarily for Alaska Native Service doctors, who are in charge of remote Alaskan hospitals. Also in attendance at the conference were medical officers stationed in Alaska with the U. S. Air Force and Army and personnel of the Alaska Department of Health.

The clinic marked the third year in which the AMA has cooperated with the Department of the Interior on Alaska's health problems. In previous years, clinics were held at all Alaska Native Service hospitals by AMA specialists. Members of the AMA teams have aided the Department of the Interior in obtaining Congressional funds for increased medical facilities in Alaska. A 200 bed tuberculosis sanatorium at Mount Edgecumbe is scheduled to open in January, and construction has started on a 400 bed hospital at Anchorage.

Arrival of the U. S. Air Force plane at Anchorage. Specialists were met by Brigadier General Frank Armstrong, Commanding General, Alaska Air Command, and Mayor T. J. Loussac of Anchorage. Left to right: Dr. George C. Turner, Dr. Edward Smith, Dr. Albert N. Lemoine Jr., Mayor Loussac, Brigadier General Armstrong, Dr. Milton Davis, Dr. Harry J. Isaacs and Dr. Elliott B. Hay.

Recruitment of doctors and nurses to staff the new hospitals is under way. Requirements for Alaskan doctors in government service include: a degree from an accredited medical school, three years' medical practice, and United States citizenship. Annual salaries are approximately $7,200, and government housing is provided at nominal cost. Doctors or nurses interested in serving in Alaska are asked to write to the Alaska Native Service, Juneau, Alaska.

Specialists who volunteered to lecture at the Alaska Medical Mission conference were: Dr. Elliott Byron Hay, associate professor of surgery, Baylor University School of Medicine, Houston, Texas; Dr. Albert Lemoine Jr., associate professor of ophthalmology, University of Kansas, Kansas City; Dr. Edward H. Smith, associate professor of obstetrics, University of Oklahoma; Dr. George C. Turner, consultant, Chicago Municipal Tuberculosis Hospital; Dr. Milton Davis, anesthetist, Louisville General Hospital, Louisville, Ky., and Dr. Harry J. Isaacs of Chicago.

Washington Letter

(From Our Regular Correspondent)

Aug. 29, 1949.

Series of AMA-Press Discussions Opened

A number of leading commentators and columnists on the Washington scene participated in a round table discussion on American medicine in the national capital on August 22. It was the first in a series sponsored by the National Education Committee of AMA, to be conducted in various sections of the country. Taking part in the opening program were Dr. George Lull, Dr. Elmer L. Henderson, Dr. John Cline, Dr. Ralph J. Gampell, Clem Whitaker and Leone Baxter.

Rapid fire questioning of the medical panel by the approximately 30 writers in attendance elicited these points:

AMA recognizes the need of medical schools for financial aid but hopes that, if such assistance comes from federal sources, there will be no interference with beneficiaries' administrative or circular policies, schools of osteopathy will not be placed on the same eligibility level with schools of medicine and favoritism will not be shown newly established medical schools in allocation of funds.

The notion held in some quarters that the AMA is "anti-everything," as one of the questioners challenged, is "a fine myth" in the words of Dr. Lull. He pointed out that the Association has given its support to such major legislation as expansion of the Hill-Burton Hospital Act, federal aid to local public health units, support of medical education, strengthening of the World Health Organization and establishment of a national science foundation, among other bills.

First of a series of reports to the people on the nation's health is being prepared by AMA for release within a year and will cover costs of medical care, adequacy of hospital and clinic facilities, effectiveness of voluntary plans, distribution of physicians, medical education and the like.

Any investigation of lobbying that may be made by Congress will have the full cooperation of AMA and the firm of Whitaker & Baxter, which is conducting the present educational campaign.

Press reports of the round table discussion gave chief prominence to the disclosure by Mr. Whitaker that Department of Justice agents demanded to see records of the Chicago Medical Society last December, shortly after he and Miss Baxter were engaged to manage the educational campaign.

Pay Raises for VA Doctors Passes House

Passed unanimously by the House on August 25 was a bill (HR 6022) increasing salary scales of physicians, dentists and nurses attached to the Department of Medicine and Surgery, Veterans Administration. The following bills were passed by the House at the same time: S. 2146, providing certain rehabilitation assistance for disabled veterans, and S. 2115, amending the act relative to furnishing of automobiles to disabled veterans.

Bills Seek Conversion of VA Domiciliaries

Identical bills were introduced in House and Senate August 23 to convert to hospital status the domiciliary facilities operated by the Veterans Administration at Clinton, Iowa, and Medford, Ore. The proposed legislation is sponsored by Representative Talle (Iowa) and Senator Morse (Ore.) The institutions involved were Army hospitals in World War II.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Cancer Symposium.—The early diagnosis and treatment of cancer in accessible sites with emphasis on diagnosis by general practitioners will be taken up at the Cancer Symposium September 24 at the Hotel California, San Francisco. The symposium is sponsored by the California Medical Association's Cancer Commission in cooperation with the California Division of the American Cancer Society.

Personals.—Dr. Herbert M. Evans, director of the Institute of Experimental Biology at the University of California, Berkeley, was lately given the highest award of the Association for the Study of Internal Secretions for "long-continued outstanding research which has notably advanced knowledge in the field of endocrinology, especially as regards the hormones of the anterior hypophysis."——The president of the Italian Republic has conferred on Dr. Jacob C. Geiger, director of public health, city and county of San Francisco, the Order of the Star of Italian Solidarity accompanied by the citation for "humanitarian activities for the Italian Republic and for the Italian citizens of San Francisco."

CONNECTICUT

Clinical Congress.—The Clinical Congress of the Connecticut State Medical Society and Yale University School of Medicine, New Haven, will take place September 13-15. Morning sessions will be held in the auditorium of the Yale Law School, and afternoon panel discussions and symposiums in the amphitheaters of the New Haven Hospital and the School of Medicine. Out of state speakers at the morning sessions include:

Paul A. Davis, Akron, Ohio, The General Practitioner and His Relationship to the Hospital Staff.
Dickinson W. Richards Jr., New York, Pulmonary Function.
F. Sargent Cheever, Boston, Viruses and Rickettsiae.
Charles A. Doan, Columbus, Ohio, Hypersplenism.
John B. Alsever, Washington, D. C., Blood Banking.
Charles F. Geschickter, Washington, D. C., Use of Laboratory Procedures.
Frank L. Meleney, New York, Bacitracin.
Theodore E. Woodward, Baltimore, Chloromycetin.
Emanuel B. Schoenbach, Baltimore, Aureomycin.
Jonathan E. Rhoads, Philadelphia, Nutritional Requirements of the Surgical Patient.
Edgar V. Allen, Rochester, Minn., Anticoagulants.
Robert E. Gross, Boston, Coarctation of the Aorta.
John E. Howard, Baltimore, Role of Potassium in Medicine.
Maurice B. Strauss, Framingham, Mass., Medical Management of Lower Nephron Nephrosis.
Joseph H. Litz, Baltimore, Psychiatric Aspects of Hyperthyroidism.

GEORGIA

Personal.—Dr. Thomas B. Phinizy, Augusta, has accepted an appointment as professor of public health at the University of Florida, Tallahassee. A graduate of the University of Georgia School of Medicine, Augusta, Dr. Phinizy for some years was health commissioner for Richmond County.

Research on Venereal Disease.—A grant of $7,700 for the continuation of a research project on venereal disease sponsored by the Emory University School of Medicine, Atlanta, Grady Memorial Hospital, Atlanta, and the Georgia Department of Health has been received from the National Institutes of Health, Washington, D. C. The funds will be used for continued evaluation of the methods of treating venereal disease. The project is under the direction of Dr. Albert Heyman, associate in medicine at the university.

ILLINOIS

Society News.—The Peoria Medical Society on September 20 will hear Dr. John I. Brewer, Chicago, speak on "Pelvic Pain." At the October 18 meeting Dr. Milton G. Bohrod, Rochester, N. Y., will speak on "Pathology of the Allergic Diseases." Both meetings will be held at the University Club.

Scientific Assembly on General Practice.—The second annual scientific assembly of the Illinois Chapter, American Academy of General Practice, will be held October 9-10 at the Pere Marquette Hotel, Peoria. Among the speakers will be Dr. Andrew C. Ivy, "Psychosomatic Aspects of Gastric Ulcer"; Dr. Everett P. Coleman, Canton, "Tumors of the Thyroid"; Dr. Harold J. Wilson, Columbus, Ohio, "Undulant Fever"; Dr. Herman F. De Feo, Chicago, "Bedside Diagnosis of Cardiac Irregularities," and Dr. LeRoy H. Sloan, Chicago, "Correlation of Laboratory and Bedside Findings." All doctors and interns are invited to attend. For information and arrangements correspond with Dr. Peter H. Furno, 4124 West Madison Street, Chicago.

Chicago

Dr. Birch to Study in Africa.—Dr. Carroll L. Birch, associate professor of medicine at the University of Illinois, has been granted a sabbatical leave of absence for a six month tour of Africa, where she will study African sleeping sickness and other tropical diseases. She will make her headquarters at Elat. She will travel with missionaries, Dr. and Mrs. George W. Thorne, and will make a tour of Presbyterian missions of Equitorial Africa. Dr. Birch plans to work primarily on the blood and bone marrow findings in African sleeping sickness.

Research on the Betatron.—The U. S. Public Health Service has awarded $15,000 to the University of Illinois College of Medicine in support of research studies involving the 22,000,000 volt betatron. The grant will be used specifically for the study of the effects of the betatron x-ray beam on bone and cartilage, under the supervision of Dr. Roger A. Harvey of the department of radiology and Dr. Granville A. Bennett of the department of pathology. Research studies have been conducted since its installation six months ago, and preparations are being made for the treatment of patients late in August.

Personals.—Dr. Raymond W. McNealy, associate professor of surgery, Northwestern University School of Medicine, in July presented two films in color on surgery of the wounds of the heart and technic for splenectomy before the Royal Academy of Medicine and Surgery of Barcelona.——Franklin C. Bing, Ph.D., director of the American Institute of Baking, Chicago, and formerly Secretary of the Council on Foods and Nutrition, American Medical Association, has resigned this position to devote full time to research and teaching in the field of foods and nutrition.

University Research in Geriatrics.—The Baptist Home and Hospital of Maywood has been granted an association with the University of Illinois College of Medicine. The service will be available for resident training. Dr. Sanford A. Franzblau, an instructor in internal medicine at the university, has been appointed medical director for the Baptist Home and Hospital. He said that a development program would be undertaken. Objectives include the installation of diagnostic laboratory facilities and the establishment of a complete system of medical records, the development of an up-to-date geriatrics nursing service under the supervision of registered nurses, the institution of special therapeutic diets suited to the needs of individual patients and the establishment of carefully controlled investigations into special problems of medical care in older persons. The Baptist Home and Hospital will provide for the personnel, laboratory facilities and special equipment needed to maintain a clinical service suitable for training on a university level and for the conduct of suitable research and investigation. The University of Illinois will supervise the clinical service and will approve and assist in the selection of professional and technical personnel. When indicated professional personnel will be given suitable academic appointments. The university also will assist in securing grants-in-aid for the support of research. The Baptist Home and Hospital, organized forty-three years ago, serves aged persons of Illinois, Indiana, Michigan and Wisconsin. It has a family of 150 members and more than 200 persons on its waiting list. Plans have been made to build a 150 bed hospital for the aged and chronically ill.

KENTUCKY

Venereal Disease Control Program.—A venereal disease control project for all counties bordering on the Ohio River from Wheeling, W. Va., to Cincinnati has been mapped by health officials of Kentucky, Ohio and West Virginia. The program will be presented for approval to the U. S. Public Health Service, and a grant will be requested for nearly $70,000 of the total cost, which will be approximately $138,000. The official title of the proposed project is "Kentucky, Ohio and West Virginia Ohio Valley Case-Finding Demonstration," which is to operate from Jan. 1 to Dec. 31, 1950, with Ashland, Ky., as headquarters. The purpose of the study is to demonstrate the effectiveness of good interviewing and immediate investigation as an expedient in locating and bringing to treatment persons infected with syphilis. The three state health departments and two regional offices of the U. S. Public Health Service will cooperate on the project.

MINNESOTA

Appointed to Institute Staff.—Dr. James F. Bosma, Minneapolis, assistant professor of pediatrics at University of Minnesota and Dr. Donald R. Lannin, St. Paul, clinical assistant at University of Minnesota Health Service, have become associated with the medical staff of the Elizabeth Kenny Institute in Minneapolis. Dr. Bosma is in charge of pediatrics and Dr. Lannin of orthopedic phases of care of poliomyelitis patients at the institute.

Southern Minnesota Medical Association.—The annual meeting of this association will be held in the Auditorium, Red Wing, September 12. Among the subjects to be discussed are the effect of cortisone and adrenocorticotropic hormone (ACTH) on rheumatoid arthritis, clinical use of aureomycin, urinary infections in children, pediatric surgery and polycythemia vera. Speakers at the banquet include Dr. Frank J. Elias, president elect, Minnesota State Medical Association; Dr. Lewis I. Younger, Winona, president of the association, and the Hon. Edward J. Thye, United States senator.

NEW YORK

Dr. Hobson Joins Squibbs Staff.—Dr. Lawrence B. Hobson, New York, has been appointed associate medical director of E. R. Squibb & Sons. He will continue his work in clinical investigation as a member of the staff of the New York Hospital-Cornell Medical Department, where he has been for the past year a postdoctorate fellow of the National Institutes of Health. Dr. Hobson obtained his Ph.D. at the University of Cincinnati and his M.D. degree at the University of Chicago in 1943. During the war he was chief of Section, Medical Research Laboratory, Edgewood Arsenal, with the rank of captain. Subsequently, he has acted as medical consultant to the Veteran's Administration.

New York City

Dedicate Tuberculosis Unit.—A completely isolated tuberculosis unit has been established at Manhattan General Hospital for the care of 150 patients to relieve the shortage of beds for the treatment of that disease in city institutions. Dedication ceremonies took place at the hospital June 16. According to Dr. Marcus D. Kogel, New York City commissioner of hospitals, it is the first time in hospital history that a private nonvoluntary hospital has accepted city patients. The unit of the sixth floor in the 500 bed hospital has been in operation since February. Dr. James S. Edlin, medical director of the Municipal Sanatorium of the City of New York, Otisville, is medical director of the new unit. The surgical division is headed by Dr. Samuel A. Thompson, who is also surgical director of the Municipal Sanatorium in Otisville.

PENNSYLVANIA

State Medical Meeting.—The Medical Society of the State of Pennsylvania will hold its annual session September 25-29 with headquarters at the Hotel William Penn, Pittsburgh. The program, organized by symposiums, includes the following guest physician speakers:

Silas M. Evans, Milwaukee, Pathogenesis of Silicosis.

Walter Kempner, Durham, N. C., Treatment of Heart and Kidney Disease and of Hypertensive and Arteriosclerotic Vascular Disease with the Rice Diet.

Arthur R. Colwell, Chicago, Types of Diabetes Mellitus and Their Treatment.

Fletcher D. Woodward, Charlottesville, Va., Medical Criticism of Modern Automotive Engineering.

Wolf W. Zuelzer, Detroit, Anemias of Infancy and Childhood.

John D. Stewart, Buffalo, Surgical Aspects of Peptic Ulcer.

Louis Schwartz, Washington, D. C., Dermatitis and Fabrics.

Donald A. Covalt, New York, Rehabilitation.

Charles A. Gordon, Brooklyn, Obstetric Hemorrhage—Cesarean Section.

John H. Peters, Pittsburgh, Some Aspects of the Relation of Cholesterol to Vascular Disease.

Orvar Swenson, Boston, Etiology and Treatment of Hirschsprung's Disease.

Louis J. Karnosh, Cleveland, Problem of Neuritis.

Lloyd G. Lewis, Washington, D. C., Testis Tumors.

David J. Sandweiss, Detroit, Present Status of the Treatment of Duodenal Ulcer.

Emanuel M. Papper, New York, Evaluation of Analgesics.

Perrin H. Long, Baltimore, A Future for Preventive Medicine.

George T. Pack, New York, Carcinoma of the Stomach.

Stewart H. Clifford, Boston, Infections of the Newborn and Premature Infant.

Technical and scientific exhibits will be shown. The Woman's Auxiliary will hold its meeting at the Roosevelt Hotel.

WASHINGTON

Professor of Graduate Medicine.—Dr. Roscoe L. Pullen, Seattle, has been appointed professor of graduate medicine, director of the Division of Graduate Medicine and vice dean of the Tulane University of Louisiana School of Medicine, New Orleans, effective October 1. Dr. Pullen has been an associate professor of medicine and director of hospital planning at the University of Washington, Seattle, since 1947 and is a consultant in internal medicine for the Madigan General Hospital in Tacoma. He had served as an instructor in medicine at Tulane University from 1943 to 1946.

State Medical Meeting.—The Washington State Medical Association will hold its annual convention at the Olympic Hotel, Seattle, September 11-14. Guest speakers include:

Robert J. Crossen, St. Louis, Role of the Gynecologist in Prevention of Uterine Cancer.

Edith Potter, Chicago, Life Cycle of Normal Ovary.

Leland S. McKittrick, Boston, Transmetatarsal Amputation.

John A. Anderson, San Francisco, Diagnosis of Poliomyelitis.

John W. Oliphant, Hamilton, Mont., Use of Antibiotics in Treatment of Rickettsial Diseases.

At the dinner September 11 Dr. Ernest E. Irons, President, and George F. Lull, Secretary and General Manager, American Medical Association, Chicago, will speak. The Woman's Auxiliary will meet in conjunction with the state association.

GENERAL

Iodine Abstracts and Reviews.—A new bimonthly periodical, *Iodine Abstracts and Reviews*, is being prepared by the Iodine Fellowship at Mellon Institute, Pittsburgh 13, Pa., to provide summaries of scientific and technical literature relating to the uses of iodine and its compounds in chemistry and industry. From time to time it will present reviews of specific phases of the science and technology of iodine. Complimentary subscriptions may be secured by addressing the Iodine Educational Bureau, Inc., 120 Broadway, New York 5, N. Y.

Personals.—Dr. Robert P. Poole Jr. of the department of pediatrics and Dr. Paul G. Fillmore, assistant resident in medicine, Duke University School of Medicine, Durham, N. C., have been assigned to the laboratory of the Atomic Bomb Casualty Committee Commission for service in Japan. The doctors will work with other American and Japanese physicians in the care and treatment of those injured in the atomic blasts in Hiroshima and Nagasaki. They will serve two years.

Insurance Medical Directors Meeting.—The annual meeting of the Association of Life Insurance Medical Directors of America will convene October 13-14 at the Hotel Statler, New York, under the presidency of Dr. Edwin G. Dewis. The following program has been arranged:

William S. Middleton, Madison, Rickettsial Diseases in the United States.

Alan D. Smith, New York, Low Back Pain.

Paul R. Hawley, Chicago, Voluntary Health Insurance.

Cornelius P. Rhoads, New York, Cancer.

Walsh McDermott, New York, Antibiotics.

Robert E. Gross, Boston, Surgical Treatment for Coarctation of the Aorta.

O. H. Perry Pepper, Philadelphia, Medical Follow-up of Veterans.

Cecil C. Birchard, Montreal, Arterial Hypertension.

International Conference on Venereal Disease.—The twenty-sixth general assembly of the International Union Against Venereal Disease will be held in Rome September 12-16 under the patronage of Dr. Cotelessa, High Commissioner for Hygiene and Public Health of the Italian Republic, and with the assistance of the Italian committee. The inaugural meeting will take place at the Capitole and the working sessions will be at the Instituti Fisioterapici Ospitalieri, 295 Viale Regina Margherita. Papers to be presented include:

Study on Distribution and Causes of Accidents Provoked by Antivenereal Arsenical Drugs, Prof. F. Flarer, Italy.

Results of Simple and Multiple Treatment of Primary Syphilis with Procaine Penicillin in Oil with Aluminum Monostearate, Drs. Delmos K. Kitchen, E. W. Thomas and Charles R. Rein, United States.

Study of Problem of Syphilitic Heredity, from the Medical and Social Points of View, Dr. Gerard, Belgium; Dr. Brun-Pedersen, Denmark, and Mrs. Neville-Rolfe, Great Britain.

Study of Prostitution, Dr. W. Clarke, United States, and Dr. R. Lavoine, France.

Prostitution in Morocco, Dr. Sicault and Lepinay, Morocco.

Study of Antivenereal Campaign in Italy, Professor Tommasi and Professor Canaperia, Italy.

Antivenereal Organization of the Inland Navigation on the River Rhine in Collaboration with the World Health Organization, Professor Pautrier, France.

Visual Methods of Popular Antivenereal Education in France, Mr. L. Viborel, France.

For further information address the Secretary of the Organization of the Congress of the International Union Against Venereal Disease, Viale Regina Margherita 295, Institute, Fisioterapici Ospitalieri, Rome, Italy.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

Division and State	Week Ended Aug. 20, 1949	Week Ended Aug. 21, 1948	Median Expec.	Jan. 1 to Aug. 20, 1949	Jan. 1 to Aug. 21, 1948	Total * March 19-Aug. 20, 1949	Total * March 20-Aug. 21, 1948
New England States:							
Maine	40	4	2	180	10	180	10
New Hampshire	15	1	1	57	7	57	7
Vermont	16	3	2	32†	8	30	7
Massachusetts	189	19	19	513	65	513	62
Rhode Island	14	..	..	35	..	35	..
Connecticut	39	6	9	165	40	162	45
Middle Atlantic States:							
New York	601	99	99	2,002	413	1,982	377
New Jersey	129	40	24	411	215	408	208
Pennsylvania	69	43	43	204	213	194	202
East North Central States:							
Ohio	200	82	48	598	398	592	389
Indiana	70	17	17	566	138	556	128
Illinois	318	66	66	1,246	296	1,230	289
Michigan	330	42	42	1,023†	168	1,002	162
Wisconsin	78	36	11	331	120	320	120
West North Central States:							
Minnesota	136	67	38	728	278	689	270
Iowa	114	37	15	487	271	474	258
Missouri	103	17	10	701	85	690	85
North Dakota	52	4	4	239	22	235	22
South Dakota	25	6	..	141	62	119	62
Nebraska	41	39	10	205	224	192	219
Kansas	55	10	7	362	92	336	89
South Atlantic States:							
Delaware	7	8	4	25	85	23	84
Maryland	10	7	7	58	22	49	21
District of Columbia	9	6	6	34	37	33	37
Virginia	21	38	25	129	230	119	228
West Virginia	29	7	9	186	67	179	51
North Carolina	14	159	7	137	1,626	110	1,602
South Carolina	2	26	1	55	207	42	199
Georgia	5	8	4	94	120	86	119
Florida	11	14	8	135	159	114	142
East South Central States:							
Kentucky	42	16	6	260	100	252	97
Tennessee	41	28	10	272	164	266	157
Alabama	6	6	7	134†	101	121	89
Mississippi	18	7	6	195	70	184	68
West South Central States:							
Arkansas	55	10	9	669	79	658	77
Louisiana	6	5	5	135	66	123	60
Oklahoma	71	25	18	759	195	752	189
Texas	104	54	49	1,537	1,185	1,446	1,164
Mountain States:							
Montana	2	..	2	23	25	22	15
Idaho	33	4	3	236	78	223	51
Wyoming	14	10	3	52	45	52	45
Colorado	60	7	7	220	40	218	38
New Mexico	7	4	..	78	38	77	36
Arizona	20	11	3	82	47	71	46
Utah	11	..	2	79	30	63	27
Nevada	..	..	..	10	2	10	1
Pacific States:							
Washington	29	3	15	210	96	165	78
Oregon	7	6	6	82	55	66	39
California	115	206	28	1,128	1,651	839	1,619
Total	3,422	1,313	.....	17,306†	9,743	16,390	9,393
Median, 1944-1948			1,254	6,262		5,999	

* Last two columns show reported incidence since approximate average seasonal low: 22 weeks.

† Corrections: Alabama: deduct 4 cases, not allocated to specific weeks. Michigan: deductions weeks ended January 8, 1 case; January 22, 4 cases; January 29, 1 case; February 19, 1 case; April 16, 1 case; July 9, 1 case; July 30, 3 cases; August 6, 1 case. Add, July 2, 2 cases. Vermont: deduct 1 case week ended July 23.

Course on Placement of the Handicapped.—To help meet the employment problems of the severely handicapped, a training course for employment and placement of counselors will be held November 7-December 7 in New York under the joint sponsorship of Alpha Gamma Delta, international women's fraternity, and the National Society for Crippled Children and Adults. The course, to be held at the Institute of Rehabilitation and Physical Medicine, Bellevue Hospital, New York, will be under the auspices of the New York University School of Medicine. Six hours of graduate academic credit will be offered by the School of Education. Fifteen to twenty fellowships for the course, amounting to $350 each, including tuition and maintenance, will be awarded through a grant by Alpha Gamma Delta. The fraternity provided a grant for a similar course held last spring. The course is part of the national cerebral palsy program of the National Society for Crippled Children and Adults, started three and a half years ago to develop a nationwide program for the cerebral palsied. Counselors from these agencies, as well as schools and industries, will be selected according to their qualifications and the contributions they can make. Counselors will visit rehabilitation and treatment centers to obtain first hand knowledge of the problems involved, make case studies and evaluations, study the psychosocial and medical aspects and hear lectures on job analysis, occupational information, psychology of the handicapped, agency interrelationships and other pertinent subjects. The first three days of the course will be spent in attendance at the annual nationwide convention of the National Society for Crippled Children and Adults, November 7-9, at the Hotel Commodore in New York. Information may be obtained from the National Personnel Registry and Employment Service of the National Society for Crippled Children and Adults, 11 South LaSalle Street, Chicago 3, Ill. Applications will be accepted until September 15, and trainees selected will be announced about October 15.

CANADA

Courses in Diagnosis of Uterine Cancer.—McGill University Faculty of Medicine, Montreal, is offering courses in clinical cytology for diagnosis of uterine cancer. A two weeks' course in individual instruction for cytologic technics and interpretation will be given November 7-21. The tuition is $100. A four week course will be given continuously for technicians to teach cytologic methods and technics, and a six to twelve months' course in cytologic interpretation.

FOREIGN

Named Foundation Director.—Fondazione Mario Donati of Milan, Italy, has chosen Prof. Carlo Foa, director of the Physiology Institute of Milan University, as president of the university succeeding the late Prof. Emilio Alfieri.

International Congress of Cardiology.—The first International Congress of Cardiology will take place in Paris Sept. 3-9, 1950. Persons planning to attend are asked to notify the secretary-general, Dr. Mouquin, 78, Rue de l'Abbé-Groult, Paris 15e, France, before Oct. 1, 1949. The registration fee is $20 (6,000 French francs) and $10 for the wives of congress members.

Advanced Course in Rheumatic Diseases.—Dr. F. Coste, professor of rheumatology at the Faculty of Medicine in Paris, assisted by Dr. R. Merle d'Aubigné, professor of orthopedic surgery, will give an advanced course on rheumatic diseases and diseases of the bones at the Hôpital Cochin in Paris October 3-November 12. The course is divided into two sessions: (1) rheumatic diseases (October) and (2) diseases of the bones. Lectures will be given in the afternoon at the Hôpital Cochin in the Amphitheatre Widal. Clinical and practical teaching will take place in the morning in the wards, supervised by Professor Coste and Professor Merle d'Aubigné, Hôpital Cochin; Prof. S. de Sèze, Hôpital Lariboisiere; Dr. Layani, Hotel Dieu, and Dr. Lièvre, Hôpital Tenon. Tuition fees are 3,000 francs ($10) for the session on rheumatic diseases and 1,200 francs ($4) for the session on diseases of the bones. An attendance certificate will be issued to all who complete the course. For further particulars write to Dr. P. Gaimiche, Hôpital Cochin, Pavillon Hardy, 27 Rue du Faubourg St. Jacques, Paris (14°), France.

CORRECTION

Markle Scholars in Medical Science Nominations.—The John and Mary R. Markle Foundation is making grants of $25,000 payable at the rate of $5,000 annually to schools over a five year period for the support of each scholar selected, not $250,000 at the rate of $5,000 annually as was stated in The Journal August 13, page 1226.

Marriages

Ernest Goodall Edwards Jr., Columbia, S. C., to Miss Dorothea Pauline Halloran of Boston, in New Haven, Conn., July 9.

Robert Stevenson Lackey, Lenoir, N. C., to Miss Julia Winchell in Germantown, Pa., July 2.

Peter J. Dulligan Jr., Brooklyn, to Miss Mary Norine Manion of Oil City, Pa., July 2.

Paul Francke Jr., Chicago, to Miss Ardath Stanton of Greenwood, Miss., July 1.

Rachel Carleton Sparks to Mr. E. B. Keeton, both of Portland, Ore., July 20.

Deaths

Thomas Reuben Keller Gruber ⊕ Eloise, Mich.; born in Navarre, Ohio, July 4, 1887; Western Reserve University School of Medicine, Cleveland, 1912; member of the House of Delegates of the American Medical Association from 1937 to 1949; served with the American Expeditionary Forces in France during World War I; specialist certified by the American Board of Psychiatry and Neurology, Inc.; fellow of the American Psychiatric Association; served as president and treasurer of the Wayne County Medical Society; member of the American College of Hospital Administrators, Michigan Hospital Association and American Hospital Association; served as president of the Health Council of Metropolitan Detroit; formerly superintendent of Receiving Hospital, Detroit; superintendent of the Wayne County Hospital and Infirmary; died August 7, aged 62, of coronary thrombosis.

Walter Edward Doyle ⊕ medical director, U. S. Public Health Service, Hot Springs National Park, Ark.; born in Canandaigua, N. Y., Oct. 7, 1895; University of Buffalo School of Medicine, 1921; entered the public health service on July 18, 1942; served as director of the state bureau of industrial hygiene, Kentucky State Department of Health in Louisville, and as chief of the medical unit, industrial hygiene division, Bureau of State Services, U. S. Public Health Service; affiliated with the cancer investigation unit of the U. S. Public Health Service Medical Center; died in the Army and Navy General Hospital April 11, aged 53, of pulmonary edema, hypertension and coronary thrombosis.

Moses Akin, Ellenville, N. Y.; Tufts College Medical School, Boston, 1925; member of the American Medical Association; served as health officer and school physician; affiliated with the Veterans Memorial Hospital; died July 11, aged 62, of coronary disease.

Mortimer Leonard Alexander, Kansas City, Mo.; Louisville (Ky.) Medical College, 1893; died July 5, aged 89.

Harold Musgrave Allen ⊕ Lawrence, Mass.; Tufts College Medical School, Boston, 1913; served overseas during World War I; on the staff of Lawrence General Hospital; died in Baker Hospital, Boston, July 3, aged 58.

Calmes Pearson Bishop ⊕ Frederick, Colo.; University of Oklahoma School of Medicine, Oklahoma City, 1937; member of the Oklahoma State Medical Association; served during World War II; died June 25, aged 37.

William James Carey ⊕ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1936; served during World War II; died July 1, aged 38, of injuries received in an automobile accident.

John Russell Carty ⊕ Forest Hills, N. Y.; Cornell University Medical College, New York, 1921; formerly on the faculty of his alma mater; served during World War I; member of the American Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; specialist certified by the American Board of Radiology; served on the staff of New York Hospital; died in the Addison Gilbert Memorial Hospital, Gloucester, Mass., July 12, aged 56, of hemiplegia, cerebral hemorrhage and arteriosclerosis.

Leon Sidney Eagleburger, Stevens Point, Wis.; Rush Medical College, Chicago, 1930; member of the American Medical Association; served during World War II; affiliated with St. Michael's Hospital; died June 18, aged 53, following an automobile accident.

David Donald Feld, Spivak, Colo.; Marquette University School of Medicine, Milwaukee, 1932; member of the American Trudeau Society and fellow of the American College of Chest Physicians; at one time affiliated with Santa Barbara (Calif.) General Hospital and Los Angeles Sanatorium in Duarte; medical director of the Sanatorium of the Jewish Consumptives Relief Society; died July 2, aged 43, of coronary insufficiency and myocarditis.

Francis Joseph Stanislaus Fitzgerald, Brooklyn; Long Island College Hospital, Brooklyn, 1897; member of the American Medical Association; served on the staff of St. Mary's Hospital; died in July, aged 74, of coronary occlusion.

Ethel Friedmann Gaal, Chicago; Magyar Kiralyi Erzsebet Tudomanyegyetem Orvostudomanyi, Pecs, Hungary, 1923; died July 13, aged 51, of coronary thrombosis.

Russell Diener Geary ⊕ Riverside, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1924; clinical professor of broncho-esophagology at his alma mater; specialist certified by the American Board of Otolaryngology; affiliated with the Broad Street, Hahnemann, St. Luke's and Children's hospitals in Philadelphia, William McKinley Memorial Hospital in Trenton and Zurbrugg Memorial Hospital; died July 3, aged 50, of meningeal sarcoma.

Allan Victor Gilliland ⊕ Smyrna, Del.; University of Western Ontario Medical School, London, Ontario, Canada, 1926; formerly secretary of the Medical Society of Delaware; died June 29, aged 48.

James C. Grady, Kenly, N. C.; Baltimore University School of Medicine, 1887; member of the American Medical Association; died July 3, aged 85.

Robert Elliott Graves ⊕ Chicago; the Hahnemann Medical College and Hospital, Chicago, 1904; Rush Medical College, Chicago, 1907; served during World War I; died July 2, aged 72, of pulmonary tuberculosis and uremia.

David Graham Hall, Dallas, Texas; Harvard Medical School, Boston, 1879; died June 28, aged 91, of lobar pneumonia.

William Benjamin Hanelin, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; veteran of the Spanish-American War; formerly on the staff of the American Hospital, where he died July 23, aged 70, of coronary thrombosis.

Lawrence A. Hick, Delta, Colo.; Omaha Medical College, 1895; member of the American Medical Association; served as a member of the board of directors of the Delta Savings and Building Association for many years; on the staff of Delta Memorial Hospital; died June 25, aged 80, of chronic myelogenous leukemia.

Andrew J. Hill, Chicago; Jenner Medical College, Chicago, 1911; died in Provident Hospital July 7, aged 73, of paralysis agitans.

Luther Albion Hodsdon ⊕ Miami, Fla.; Tufts College Medical School, Boston, 1898; affiliated with Dade County Hospital; died July 9, aged 72, of cerebral thrombosis.

Orval Nathan Hooker, Amarillo, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1940; member of the American Medical Association; served during World War II; affiliated with St. Anthony's and Northwest Texas hospitals; died July 5, aged 33.

Robert A. Howell, Gallipolis, Ohio; Medical College of Ohio, Cincinnati, 1895; also an attorney; died June 1, aged 86.

Ira Butler Hull, Newmarket, N. H.; Harvard Medical School, Boston, 1912; member of the American Medical Association and the Massachusetts Medical Society; formerly member of the school board and for many years medical examiner for the Gloucester (Mass.) area; served on the staff of Addison Gilbert Hospital, Gloucester, Mass., where he died July 9, aged 67, of hypertension and nephritis.

Samuel Jerome Hurwitt ⊕ San Francisco; University of Kansas School of Medicine, Kansas City, 1921; member of the American College of Chest Physicians and the American Trudeau Society; died June 5, aged 55, of carcinoma of the bladder.

John Felix Jenkins Sr., Birmingham, Ala.; Medical College of Alabama, Mobile, 1901; member of the American Medical Association; served during World War I; died July 3, aged 74.

Frank Le Baron Jenney, Lakeside, Mich.; College of Physicians and Surgeons of Chicago, 1890; formerly medical director of the Federal Life Insurance Company in Chicago; died July 3, aged 79, of arteriosclerosis.

Albert Johnson, Washington, D. C.; Howard University College of Medicine, Washington, 1892; died July 1, aged 81, of chronic myocarditis.

William Reid Johnson ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1930; served during World War II; died July 14, aged 42, of acute coronary thrombosis.

John Morgan Jones ⊕ Oakland, N. J.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; served during World War I; affiliated with Christ Hospital in Jersey City; died July 10, aged 72, of heart failure.

Thomas Melville Proctor, Wrentham, Mass.; Harvard Medical School, Boston, 1905; served during World War I; died in Boston, June 8, aged 72, of pulmonary embolus, arteriosclerotic heart disease and myocardial infarction.

John Jay Russell, Deepwater, Mo.; University Medical College of Kansas City, 1889; member of the American Medical Association; died in the Clinton (Mo.) General Hospital June 2, aged 88.

Correspondence

POLLINOSIS IN SOUTHERN CALIFORNIA

To the Editor:—In Queries and Minor Notes in THE JOURNAL of Sept. 11, 1948, page 167, under the heading "Allergy and Myopia," a New York physician inquires "What are the best areas in California for patients with hay fever and allergy?" Your consultant answers "California is practically free from ragweed. Therefore, patients who are sensitive to ragweed will almost certainly be free of symptoms in any part of that state."

In a subsequent issue, Shure and Harris (Allergy and Myopia, J. A. M. A. **139**: 554 [Feb. 19] 1949) reply that (1) the statement that patients who are sensitive to ragweed will almost certainly be free of symptoms in any part of this state is misleading, since the Western ragweed that grows here is antigenically related to short and giant ragweed, and (2) a patient moving to this area from the East will probably substitute an allergy to plants with prolonged seasons of pollination in place of an allergy to plants with short pollinating seasons.

While it is highly commendable for Shure and Harris to call attention to the fact that pollen sensitivity exists here as elsewhere, their brief communication may be equally misleading in the opposite sense, in the implication that there can be no advantage to be gained by patients with pollinosis by their moving to Southern California. In view of the reputation which this part of the country has for "climate" and in view of the thousands of patients who are annually referred here to partake of the advantages of this climate, further elaboration is desirable.

The belief that ragweed hay fever is practically nonexistent in this area is indeed prevalent in some quarters and appears to be based on the following mistaken notions held in both medical and lay circles:

1. Ragweed is not present in Southern California. At present this holds true for short ragweed (Ambrosia elatior) and giant ragweed (Ambrosia trifida), but not for other members of the ragweed tribe. The native flora here includes western ragweed (Ambrosia psilostachya) and various representatives of the false ragweeds (genus Franseria), the marsh elders (genus Iva) and the cockleburs (genus Xanthium), to name some of the more familiarly known plant groups.

2. Each species of ragweed has an antigen peculiar to itself, and, since short and giant ragweed are not found here, patients subject to ragweed allergy east of the Rockies may escape their difficulty by coming to California.

The weight of evidence does not support this concept of "species-specificity" among pollen antigens. Limitation of space prevents the marshalling of available evidence from the literature on this point, but suffice it to say that Blackley as far back as the last century noted that among the grasses there appears to be a widespread sharing of a common antigen beyond the boundaries of the genus, and with respect to the ragweeds it has been known for some time that the antigen in both short and giant ragweed is identical. The work of Prince and Secrest (*J. Allergy* **10**: 537, 1939) indicated that the same antigen is present also in western ragweed (but that burweed marsh elder has a different antigenic pattern). My own work (unpublished data) has led me to the conclusion that the identical antigen or antigenic mixture which is found in short and giant ragweed is present not only in all species of Ambrosia but also in all species of Franseria. This was pointed out by me in 1946 (Letters of the International Correspondence Society of Allergists, s. 10, 1946, p. 26), at which time I stated, "I have not been able to detect any antigenic differences between the various species of *Ambrosia* or *Franseria* so that eastern patients sensitive to *Ambrosia elatior* or *trifida* are also sensitive to *Ambrosia psilostachya* and to the Franserias."

It follows from this that a person cannot as a rule hope to escape the plant antigen to which he is sensitive by migrating to a part of the country where species (or genera) of his original environment may be absent but where related species (or genera) are present. Nevertheless, this does not mean that one cannot by such a move effect a change for the better. The answer to the problem is determined basically by the amount of atmospheric pollen the person will encounter in this or that area.

Durham has devoted years of effort to securing data from all parts of the country regarding the seasonal incidence of ragweed pollen. A report by him (Pollen Studies in Selected Areas, J. A. M. A. **104**: 1486 [April 27] 1935) reveals clearly the differences in ragweed pollen incidence as between Southern California and other areas. A total count averaging about 100 for the entire fall season here is in sharp contrast to counts as high as 3,000 and more in the Midwest; or, to place the comparison on a daily basis from my own personal experience, counts running into the hundreds at the height of the season in the Chicago area may be contrasted with daily counts here which do not exceed 5.

These comparative figures indicate that ragweed sufferers in the Midwest may expect measurable relief in this area, and this is borne out by clinical experience. When a patient's sensitivity is pitched at such a level that residence in a high count area is marked by incapacitating asthma and rhinitis, whereas residence in a low count area calls forth nasal and chest symptoms that are tolerable or minimal, the length of the pollinating season in the low count area becomes of little importance.

I have dwelt at length on ragweed because of its clinical importance, because of the misconceptions regarding its occurrence and significance here and because comparative data with respect to ragweed pollen incidence have long been available through Durham's work. Until recently it was not possible to make similar comparisons for other pollens in this area, except for the fall months, because no such data was available. To correct this situation I have recently published a pollen survey (*Ann. Allergy* 6: 645, 1948) covering all months of the year for the Los Angeles area. The survey reveals that, though the pollinating seasons here are longer, the counts for most of the pollens of major clinical importance are in general notably lower than those reported from areas east of the Rockies. This does not mean that pollinosis is almost nonexistent here. The prevalence of clinical pollen allergy in this area has been pointed out more than once (Piness, G.: J. A. M. A. **84**: 584, 1925. Stealy, C. L.: *J. Lab. & Clin. Med.* **22**: 273, 1936. Targow, A. M.: *Ann. Allergy* 6: 645, 1948). It is evident that, though the counts here are low in contrast to counts elsewhere, the air-borne pollen density is nevertheless sufficient to induce sensitization. But, as stated, for the majority of cases the intensity of the resulting symptoms does not approach that which prevails in high count areas.

One may conclude, therefore, that when plant pollens present themselves as the only offenders in instances of clinical allergy this may indeed be a better climate for patients to move to. Unfortunately, plant pollens are not always the only factors involved, and when multiple sensitivity exists the situation may be entirely reversed. Newly arrived patients sensitive to house dust, for example, not infrequently find their symptoms to be much worse here than elsewhere. Similarly, other factors may so overshadow the pollen factor as to render useless any change of residence.

The fact that Southern California is not to be considered a Utopia for all cases of allergy cannot be too strongly emphasized in view of the readiness with which Eastern physicians ship their problem patients here, hoping for a miraculous improvement. Too often no such improvement takes place, and not infrequently the patient gets worse.

A. M. Targow, Ph.D., M.D.,
University of Southern California School of Medicine, Los Angeles.

Council on Medical Education and Hospitals

APPROVAL OF THE BOARD OF THORACIC SURGERY

During the past year the Board of Thoracic Surgery was organized as a subsidiary board of the American Board of Surgery. It has been officially approved by the Advisory Board for Medical Specialties and by the Council on Medical Education and Hospitals of the American Medical Association. The board is the nineteenth examining board in the specialties to be approved by the Council.

Certification by the American Board of Surgery is a prerequisite for certification by the Board of Thoracic Surgery. The board has awarded 174 Founder Member certificates since its organization. The first examination by the board was given Aug. 1, 1949.

The chairman of the Board of Thoracic Surgery is Dr. Carl Eggers, New York, and the secretary-treasurer, Dr. William M. Tuttle, 1151 Taylor Avenue, Detroit.

Donald G. Anderson, M.D., *Secretary.*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II*, New York City, Feb. 9-10. Address: Sec.-Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, October 26 Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter [illegible]

Arkansas:* [illegible] Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Ecl*[illegible] Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado:* *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut:* *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia:* *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida:* *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Illinois: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa:* *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Minnesota:* Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Jefferson City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Montana: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: Santa Fe, Oct. 10-11. Sec., Dr. Charles J. McGoey,* Coronado Bldg., Santa Fe.

New York: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

Ohio: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oregon: *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland.

Oklahoma:* *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

Rhode Island:* *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota:* Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Tennessee:* *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington:* Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

Wisconsin:* *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona: *Examination.* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Connecticut: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Minnesota: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medicine, New York

6:275-404 (March) 1949

Correlation of Liver Function and Liver Structure: Clinical Applications. H. Popper, F. Steigmann, K. A. Meyer and others—p. 278.
*Correlation of Hepatic Structure and Function. L. W. Kinsell, H. A. Weiss, G. D. Michaels and others.—p. 292.
*Treatment of Hepatic Amebiasis with Chloroquine. N. J. Conan Jr. —p. 309.
Liver Function During Infectious Mononucleosis. J. W. Brown, J. L. Sims, E. White and J. E. Clifford.—p. 321.
Endecrinopathies Associated with Hyperostosis Frontalis Interna. F. E. Harding.—p. 329.
Subacute Bacterial Endocarditis. R. Snyderman and J. S. Tipping. —p. 336.
Epidemiology of Syphilis. T. J. Bauer and A. P. Iskrant.—p. 341.

Correlation of Hepatic Structure and Function.—Clinical, chemical and histologic follow-up studies have been made by Kinsell and collaborators over long periods in a large group of patients with acute, subacute and chronic hepatic disease. For this report, 3 acute, 1 subacute and 5 chronic cases were selected from a larger group as being most representative. From a study of liver biopsy sections and results of tests of chemical function, only rather gross information can be obtained about the activity, extent and duration of the process causing damage to the liver. Activity is correlated histologically with phagocytic cell infiltration and with hepatocellular change as manifested by widespread multinucleation, abnormalities of cell shape and size and abnormalities of staining characteristics. Activity is indicated by abnormal results of cephalin-cholesterol flocculation and thymol turbidity tests as well as elevation of the serum bilirubin and/or icterus index. Extent and duration of the hepatotoxic process are manifested histologically by hepatocellular change and by fibrosis. The chemical changes which are found in liver damage of widespread extent and/or long duration are abnormal sulfobromophthalein retention, diminished hepatic glycogen storage and elevation of the serum bilirubin and/or icterus index. The authors feel that there are still many gaps in the knowledge of the histologic and physiologic aspects of the liver and that when such additional knowledge is obtained revision of the present archaic classification of hepatic disease will be in order. An approach to such a reclassification is presented.

Treatment of Hepatic Amebiasis with Chloroquine.—According to Conan the wartime antimalarial drug research program disclosed a number of highly active compounds of the 4-amino-quinoline series. It seemed logical to determine whether their antiplasmodial activity extended to other pathogenic protozoa. The infection selected for study was that with Endameba histolytica, because of its relative prevalence among protozoal infections in the New York area. Of the various 4-amino-quinoline derivatives tested for antimalarial activity, the greatest amount of information was available concerning chloroquine, which is 7-chloro-4-(4-diethylamino-1-methylbutylamino) quinoline, and which had proved to be one of the more active and less toxic members of the series. The author used chloroquine successfully in 7 patients with amebic hepatitis. Chloroquine is a safe and effective chemotherapeutic agent for the treatment of amebic infections of the liver, being at least as effective as emetine hydrochloride but without the latter's toxicity. The combination of chloroquine with a superior intestinal antiamebic drug should permit adequate treatment of any amebic infection and should permit wider use of antiamebic chemotherapy as a diagnostic and therapeutic test in obscure infections of the liver and intestine.

Bulletin of the Los Angeles Neurological Society

14:1-52 (March) 1949

Analysis of Electroencephalographic Findings in 40 Cases of Verified Brain Tumor: I. Electroencephalographic Findings in Meningiomas. H. M. Cuneo, C. W. Rand and H. Sjaardema.—p. 1.
*Intravenous Procaine Hydrochloride in Treatment of Asphyxia Due to Carbon Monoxide: Report of 3 Treated Cases and 2 Untreated Cases with Electroencephalographic Correlation. C. W. Olsen, A. A. Marinacci, J. W. Ray and E. W. Amyes.—p. 23.
Unilateral Prefrontal Lobotomy for Relief of Intractable Pain: Preliminary Report of 8 Cases. P. J. Vogel and G. D. Hjartarson. —p. 32.
Glomus Tumors (Angioneuromyomas): Clinical and Pathologic Report of Case. D. L. Reeves.—p. 40.
Epilepsy Incident to Protoplasmic Astrocytoma: Report of Case. G. N. Thompson and R. Raney.—p. 46.

Intravenous Procaine Hydrochloride in Asphyxia Due to Carbon Monoxide.—Most cases of carbon monoxide poisoning terminate either in death or in recovery without residual ill effects. With the rescue of victims from near fatality, survival with more or less serious residual effects is increasingly common. Pneumonia, disorders of the heart, gangrene of the extremities and pressure sores are reported from time to time. The authors discuss residuals in the nervous system. Courville summarizes the pathologic findings in the central nervous system as hyperemia and edema of the brain, hemorrhages of various sizes in the globus pallidus, gross softening of the globus pallidus due to acute necrosis, calcareous deposits in the small blood vessels, cyst formation and vascular scars with calcareous deposits. The clinical syndromes in survivors include protracted coma, psychosis, parkinsonism, polyneuritis, blindness and asthenic states. Painful spasms of skeletal muscles are especially characteristic during the early phase of recovery. Olsen and co-workers attempted to repeat the reported beneficial effects of intravenous injections of procaine hydrochloride in carbon monoxide poisoning. Cases were selected in which recovery was incomplete, and particularly those in which the residual symptoms could be correlated with cerebral dysrhythmia as shown in electroencephalograms. The authors report 3 cases in which procaine hydrochloride was given. The prompt restoration suggests that procaine influences the circulation favorably, with commensurate improvement in the wave pattern. In the state of dehydration accompanying carbon monoxide poisoning there is a good deal to be gained by intravenous administration of isotonic sodium chloride solution, and procaine hydrochloride can be administered simultaneously in the 0.1 per cent concentration. This method of administration, as well as the more convenient method of administration by syringe injection, of as much as 10 cc. of 1 per cent solution, seems to have contributed to the early recovery of the patients. The consistency of correlation between the clinical symptoms and the electroencephalographic findings, even in patients who made rapid recovery, is a remarkable feature of this study.

Bulletin New York Academy of Medicine, New York

25:135-196 (March) 1949

New Analgesic Drugs. H. B. van Dyke.—p. 152.
Early Ambulation Following Surgical Procedures. J. B. Blodgett. —p. 176.
Principles of Nutrition Therapy. R. S. Goodhart.—p. 185.

25:199-268 (April) 1949

Management of Acute Renal Failure. I. Snapper.—p. 199.
Place of Electrolyte Studies in Surgical Patients. J. S. Lockwood and H. T. Randall.—p. 228.

Georgia Medical Association Journal, Atlanta

38:89-130 (March) 1949

Propionic Acid in Therapy of Mycotic Vulvovaginitis: Method of Diagnosis. R. R. Suran and R. B. Greenblatt.—p. 89.
Simple Stain for Trichomonads and Vaginal Epithelia. R. B. Greenblatt.—p. 95.
Is Cholesterol Metabolism Getting Enough Attention in Early Coronary Disease? W. W. Blackman and J. M. Walton.—p. 96.
Fallacy of Basal Metabolic Rate. J. K. Fancher.—p. 98.
Rocky Mountain Spotted Fever. H. M. Reynolds and Helen W. Bellhouse.—p. 101.
Nasal Reconstruction: Report of Case. J. R. Lewis Jr.—p. 104.
Government Medicine in New Zealand—It's Social, Economical, and Political Implications. A. L. Jones.—p. 106.
Cancer News. J. C. Norris.—p. 112.
Voluntary Prepayment Medical Plans Gaining in Public Favor. E. H. [illegible] 113.

Journal of Nervous and Mental Disease, New York

109:201-290 (March) 1949

Some Observations on Lobotomized Patients Based upon Routine Neurologic Examinations. A. S. Rose.—p. 201.
Experimental Production of Convulsive Seizures. C. L. Anderson.—p. 210.
Verified Cerebral Aneurysm with Negative Arteriogram. B. J. Alpers and J. J. Ryan.—p. 220.
Oculokinetic Test of Equilibratory Co-ordination Having Differential Diagnostic Use. R. Meyers.—p. 226.
Inducing Anxiety as Part of Therapeutic Method. E. F. Walker.—p. 233.
Allergy and Psychoneuroses. F. C. Metzger.—p. 240.
Wechsler-Bellevue Scale and Substitution Test as Aid in Neurophychiatric Diagnosis: Part 2. Louise R. Hewson.—p. 246.

New England Journal of Medicine, Boston

240:403-444 (March 17) 1949

Prothrombin: Critique of Methods for Its Determination and Their Clinical Significance. B. Alexander, A. de Vries and R. Goldstein.—p. 403.
Partial Uretheral Obstruction: Its Effect on Urinary Excretion. G. J. Warren and J. M. Looney.—p. 413.
Mumps Complicated by Myocarditis, Meningoencephalitis and Pancreatitis: Review of Literature and Report of Case. J. H. Bland.—p. 417.
Left Vocal-Cord Paralysis Associated with Hypertensive Heart Disease. W. C. L. Diefenbach.—p. 419.
Torsion of Normal Fallopian Tube Complicating Pregnancy: Report of Case. R. K. Caldwell.—p. 421.
Syphilis. G. M. Crawford.—p. 422.
Benign Cystic Teratoma of Kidney.—p. 432.
Bronchial Adenoma.—p. 435.

New York State Journal of Medicine, New York

49:577-688 (March 15) 1949

Experiences with Retropubic Prostatectomy. F. A. Beneventi and F. P. Twinem.—p. 623.
Hormone Control Therapy as Preparation for Radical Perineal Prostatectomy in Advanced Carcinoma of Prostate. A. L. Parlow and W. W. Scott.—p. 629.
Experimental Approach to Psychosomatic Bladder Disorders. L. R. Straub, H. S. Ripley and S. Wolf.—p. 635.
Control of Tubercle *Bacillus* by Synergistic Treatment. G. E. Slotkin and W. Spencer.—p. 639.
Tonus of Upper Urinary Tract and Its Influence on Renal Dynamics and Absorption. P. A. Narath.—p. 645.
Wilms' Tumor. C. T. Hazzard, M. M. Melicow and R. F. Seidel.—p. 649.
Effect of Ingestion of Aluminum Hydroxide on Serum Salicylate Level. R. Wégria, D. Weaver and H. Krakauer.—p. 658.
Lability Test: New Procedure for Diagnosis of Chronic Simple Glaucoma. S. Bloomfield.—p. 659.
Rhinologic Use of Oxidized Cellulose Gauze. E. J. Elsbach.—p. 663.

Pediatrics, Springfield, Ill.

3:277-400 (March) 1949

*Mode of Action of Streptomycin on H. Influenzae Type B. III. Nature of Streptomycin Action on Sensitive H. Influenzae. Hattie E. Alexander and Grace Leidy.—p. 277.
Congenital Chondrosternal Prominence (Pigeon Breast), a New Interpretation. H. A. Brodkin.—p. 286.
Generalized Non-Fatal Histoplasmosis in Infant. R. W. Blumberg, I. Ruchman and R. J. Johansmann.—p. 296.
*Encephalitis: Isolation and Identification of Virus from Body Fluids of Human Subjects. R. J. Blattner and Florence M. Heys.—p. 303.
Cyanosis in Infants with Nitrates in Drinking Water as Cause. W. E. Donahoe.—p. 308.
Pediatric Aspects of Hemophilia. A. J. Quick.—p. 312.
Immunohematologic Observations on Erythroblastotic Infants. I. Diagnosis and Prognosis. P. Sturgeon.—p. 318.
Successful Removal of Hemangioma of Liver in Infant. T. Shuller, J. L. Rosenzweig and J. B. Arey.—p. 328.
Combined Immunization Against Diphtheria, Tetanus and Pertussis in Newborn Infants. III. Relationship of Age to Antibody Production. P. A. di Sant'Agnese.—p. 333.
Pure Granulomatous Nocardiosis: New Form of Disseminated Infectious Granulomatosis with Massive Retroperitoneal Lymphadenopathy Due to *Nocardia Intracellularis* (n. sp.). M. L. Weil, J. T. Cuttino and Anne M. McCabe.—p. 345.

Action of Streptomycin on Haemophilus Influenzae.—Alexander and Leidy inoculated pour plate preparations of Levinthal agar containing various concentrations of streptomycin with differently sized bacterial populations of three strains of Haemophilus influenzae type B. The bacteria were exposed to the action of streptomycin for varying periods. Results demonstrated that members of H. influenzae type B populations are not uniformly sensitive to streptomycin. Over 99 per cent are susceptible to 1.6 microgram per cubic centimeter; the larger the population, the wider the variation in resistance of the small fraction surviving. The injurious action of streptomycin on H. influenzae type B is primarily bactericidal. Streptomycin in concentrations between 10 and 100 micrograms per cubic centimeter exerts a rapid lethal action; the greater the concentration of the antibiotic, the greater the speed. Significant increases in size of population increase the time required for bactericidal action. Demonstration of the rapid in vitro bactericidal action of streptomycin on H. influenzae together with the data presented concerning the sterilization of the spinal fluid of patients after the administration of streptomycin suggest that when streptomycin is used in the treatment of H. influenzae infection in man its intramuscular administration over a period not longer than twenty-four hours will ordinarily suffice to obtain a maximal streptomycin effect, that in cases of meningitis the addition of a single intrathecal dose of streptomycin of 25 mg. will be adequate and that the use of sulfadiazine as an adjuvant is advisable to bring under control the eventual resistant mutants which may survive the bactericidal action of streptomycin.

Isolation and Identification of Encephalitis Virus.—Blattner and Heys inoculated the heparinized blood of 81 patients showing signs of clinical encephalitis into mice and into the retracted chorioallantois of embryonated hen's eggs in attempting isolation of virus from the blood. A filtrable virus was isolated in 1 instance only, namely, from the peripheral blood of a boy aged 8 seen at St. Louis Children's Hospital during July 1945. The infectious agent was identified by appropriate tests as the virus of St. Louis encephalitis. No virus was isolated from the spinal fluid of this patient. A series of 304 patients was studied for the presence of virus in the spinal fluid; a virus was recovered in 7 cases. Five strains of lymphocytic choriomeningitis virus were isolated, four of them in children between the ages of 6 and 14 years and one in a young adult. In 1 case of encephalitis following smallpox vaccination in an infant of 9 months a strain of vaccinia was recovered from blood-tinged spinal fluid taken on the thirteenth day following vaccination. A strain of herpes virus (simplex) was isolated from the spinal fluid of a boy aged 14. The results reported cover a period of about ten years. A third series of studies concerned blood serums. Increasing titer of type-specific antibody to the virus of St. Louis encephalitis was demonstrated in 17 of 152 patients during the course of clinical encephalitis.

Southern Surgeon, Atlanta, Ga.

15:151-204 (March) 1949

Metycaine Saddle Block Analgesia in Obstetrics. H. B. Turner.—p. 151.
Congenital Anomalies of Gastrointestinal Tract in Infants and Children. G. H. Martin.—p. 163.
Treatment of Bilateral Apical Pulmonary Tuberculosis. D. A. Wilson.—p. 179.

Texas State Journal of Medicine, Fort Worth

45:119-182 (March) 1949

Etiology and Treatment of Optic Neuritis. W. L. Benedict.—p. 126.
Senile Cataract Patient: Pattern for Surgical Management. R. K. Daily and L. Daily Jr.—p. 130.
Prevention and Treatment of Complications in Cataract Surgery. E. L. Goar.—p. 136.
Treatment of Glaucoma. L. H. Quinn.—p. 142.
Orthoptics Without Instruments. S. N. Key Jr.—p. 146.
Chronic Paranasal Sinus Disease in Adults: Factors Influencing Treatment. J. P. Gill.—p. 149.
Irradiation of Nasopharynx. A. N. Champion.—p. 153.
Roentgenologic Study of Colon: Value of Double Contrast Enema. R. D. Moreton and C. W. Yates.—p. 157.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

57:99-142 (March) 1949

Safe Method of Exsanguination Transfusion in Treatment of Erythroblastosis Fetalis: Report of 7 Cases. A. M. Boyden.—p. 99.
Vesical Endometriosis: Report of 2 Cases. T. G. McDougall and S. J. Deur.—p. 107.
Schubert Operation for Congenital Aplasia of Vagina with Report of 2 Cases. J. L. Bubis.—p. 113.
Term Pregnancy Complicated by Ruptured Appendix with Generalized Peritonitis. M. G. Potter and M. G. Sadugor.—p. 120.
Postural Pains of Pregnancy: Part I—Parietal Neuralgia of Pregnancy. L. F. Bushnell.—p. 123.
Vicarious Menstruation: Resume of Literature and Report of Case. H. S. Stern.—p. 128.
Tumors of Renal Pelvis and Their Management. P. B. Potampa and C. W. Calhoun.—p. 130.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:557-602 (April 2) 1949

Whither Medicine. Lord Horder.—p. 557.
Venous Thrombosis and Anticoagulants. K. P. Ball and H. O. Hughes.—p. 560.
Diabetic Coma: Treatment With and Without Early Administration of Glucose. J. Lee, D. Naidoo and J. A. Torrens.—p. 565.
*Subacute Pancreatitis. I. Macnab.—p. 568.
Report on Outbreak of Influenza in the Army. D. G. Milne and J. D. Cruickshank.—p. 571.
Spontaneous Intra-Abdominal Hemorrhage. A. L. Woolf and H. R. Thomson.—p. 572.
Effect of Pressure Cooking on Vitamin C Content of Vegetables. G. M. Chappell and A. M. Hamilton.—p. 574.
Spermatolysis: Cause of Male Sterility. C. Yildiran.—p. 575.

Subacute Pancreatitis.—According to Macnab subacute pancreatitis is not as widely recognized as the acute hemorrhagic form and the chronic types of the disease. Subacute pancreatitis is a fairly rapidly developing inflammation of the pancreas, generally associated with much edema, which does not produce the same urgent clinical picture as the hemorrhagic form. There is a tendency to recurrence, and the initial attack is generally followed by several similar attacks over a period of time, producing the syndrome of recurrent pancreatitis. During one year at the General Hospital, Birmingham, there were 19 cases of subacute pancreatitis. The author presents tables summarizing the clinical findings in 6 patients with an initial attack of subacute pancreatitis and in 13 patients with a recurrent attack of subacute pancreatitis. The possibility of subacute pancreatitis must always be borne in mind in the diagnosis of an abdominal emergency, especially acute cholecystitis. Confusion of the condition with cholecystitis accounts for many of the cases of recurrence of symptoms following cholecystectomy. This error in diagnosis would largely be obviated if serum-amylase investigations were more often employed in elucidating obscure upper abdominal pain. Subacute pancreatitis is not a rare condition, and its diagnosis depends largely on one's being aware of the existence of this clinical syndrome.

Journal of Obst. & Gynaec. of Brit. Empire, Manchester

55:1-180 (Feb.) 1949. **Partial Index**

Pathology and Repair of Genital Prolapse. K. Pacey.—p. 1.
Natural Childbirth in Teaching Clinic. H. Thoms.—p. 18.
Review of Series of 100 Cases of Vesicovaginal Fistula. R. G. Krishnan.—p. 22.
*Anemia Simulating Pre-Eclamptic Toxemia. J. M. Scott and A. D. T. Govan.—p. 28.
Measurement of Rate of Venous Blood-Flow in Legs of Women at Term and in Puerperium, Using Radioactive Sodium. H. P. Wright and D. G. Edmonds.—p. 36.
Treatment of Carcinoma of Body of Uterus. B. Rickford.—p. 41.
*Pulmonary Embolism by Amniotic Fluid: Report of Fatal Case, Together with Review of Literature. D. M. Shotton and C. W. Taylor.—p. 46.
Morphine Mucate in Labor and Obstetric Practice: Preliminary Communication of Results in Series of 170 Injections. W. F. Flint.—p. 54.
Locked Twins: Report of 3 Cases. R. F. Lawrence.—p. 58.
Pasini's Strain for Vaginal Smears. W. S. Bullough.—p. 64.
Contribution to Historical Record of Monstrous Births. J. F. D. Shrewsbury.—p. 67.
Observations on Aftercoming Head. J. Baxter.—p. 95.
Chronic Lymphatic Leukemia Presenting as Neoplasm of Cervix Uteri. L. Stein.—p. 107.

Anemia Simulating Preeclamptic Toxemia.—Scott and Govan report observations in 13 cases of anemia simulating preeclamptic toxemia. The chief symtoms were edema, hypertension and albuminuria. The general symptoms and signs commonly associated with anemia were absent in all but 4 cases. The syndrome can be distinguished from that of true toxemia by careful examination of the blood pressure, urine and blood picture. The increase in blood pressure is mainly on the systolic side, and there is a consequent increase in the pulse pressure. The blood pressure usually falls to normal limits within twenty-four or forty-eight hours of the patient's admission to the hospital. The edema is much severer in these cases of anemia in relation to the hypertension than in preeclamptic toxemia, and the extent of the edema appears to vary directly with the severity of the anemia. Despite the gross edema, albuminuria is of slight degree and the urine rapidly clears with rest in bed. Untreated asymptomatic patients rapidly became symptomatic in the puerperium, generally about the third day. The sudden appearance of symtoms in these cases may afford an explanation for reports of cases of puerperal pernicious anemia of sudden onset. Examination of the peripheral blood and bone marrow has shown that these are cases of atypical pernicious anemia of pregnancy. The peripheral blood picture is that of an ordinary iron deficiency anemia, but the bone marrow contains megaloblasts and the normoblasts are greatly reduced. Iron therapy rectifies the iron deficiency, but the blood picture improves only to a certain limit and liver therapy has to be provided.

Pulmonary Embolism by Amniotic Fluid.—Shotton and Taylor report a sudden death during labor due to pulmonary embolism by amniotic fluid; 14 other recorded cases are cited. This condition is a clinical entity in which the patient is usually a healthy multigravida with a large, perhaps postmature, fetus. Labor is violent, and the baby is often stillborn. During labor, or shortly after delivery, there is a sudden onset of profound shock, with cyanosis and dyspnea, terminating fatally in a few hours. At necropsy there is usually no obvious cause of death, but microscopic examination of the lungs shows emboli, consisting of the particulate contents of the amniotic fluid, in the smaller pulmonary vessels. The possibility of a sublethal type of embolism raises the question of treatment. Steiner and Lushbaugh point out that the condition is aggravated by reflex spasm in the lungs and cardiac depression. The administration of atropine to dogs before injection of the amniotic fluid lessened the severity of the reaction, presumably by abolishing depressor reflexes from the lung to the heart. On this evidence they advocate treatment with large doses of morphine and atropine, together with oxygen inhalation. Treatment of the shock with intravenous fluids is contraindicated because of the pulmonary edema.

Lancet, London

1:553-592 (April 2) 1949

Role and Value of Anamnesis. A. Abrahams.—p. 553.
Retinal and Vascular Damage in Long-Standing Diabetes. J. H. Croom and G. I. Scott.—p. 555.
Deaths from Vagal Inhibition. K. Simpson.—p. 558.
*Adrenolytic Action of Dihydroergocornine in Man. R. H. Goetz and A. Katz.—p. 560.
Reablement of Tuberculous Patients. R. Grenville-Mathers.—p. 563.
Cretinism with Goitre in Infancy: 2 Cases Treated with Thyroid. V. Smallpeice.—p. 565.

Adrenolytic Action of Dihydroergocornine.—According to Goetz and Katz dihydroergocornine, also known as D.H.O. 180, is adrenolytic as well as sympathicolytic, an action which has never before been demonstrated in man for any ergot derivative. In the experiments described, the blood pressure, peripheral blood flow, heart rate, respirations and skin temperature were recorded. Epinephrine, 1:500,000, was given at a desired and constant rate by intravenous drip. The investigations were made of 2 normal persons and 3 uncomplicated cases of essential hypertension—i.e., cases in which there was no evidence of congestive heart failure, myocardial damage, disease of the kidneys or the fundi or any other condition to which the hypertension could have been secondary. Dihydroergocornine, besides being sympathicolytic, suppresses and reverses the pressor response to epinephrine in man. It does not abolish the cardio-accelerator effect of epinephrine. The vasoconstrictor effect of epinephrine on the digital circulation is not affected by dihydroergocornine given in doses sufficient to suppress or reverse the effect on the blood pressure. The stimulating effect of epinephrine on the respiratory center (direct or indirect) is not abolished by doses of dihydroergocornine sufficiently to reverse or suppress the pressor response. The respiratory depression produced by dihydroergocornine is abolished and respiration is regular while epinephrine is administered. Dihydroergocornine apparently does not promote the destruction of epinephrine either in vitro or in vivo. The possible clinical usefulness of dihydroergocornine is indicated.

Acta Tuberculosea Belgica, Brussels

40:1-80 (Feb.) 1949

Problems of Tuberculosis in the Negroes of Belgian Congo in 1948. J. Firket.—p. 1.
*Epituberculosis, Postoperative Complications and Streptomycin. L. De Winter.—p. 18.
*Streptomycin Therapy. J. Morin.—p. 48.

Postoperative Complications and Streptomycin.—According to De Winter, toxic products of tuberculin type are *probably given off when caseous tissues* are crushed during operation on the lungs. The absorption of these toxins by the organism induces more or less important perifocal reactions around the active foci. These reactions are comparable to perifocal reactions after administration of high doses of tuberculin. Clinically they correspond to pneumonic processes of late childhood first described by Grancher as splenopneumonia and more recently by Eliasberg and Neuland as epituberculosis. For these perifocal reactions the terms "hepatization" or "splenization" are used by the author, in the sense of condensation of the pulmonary parenchyma by intense congestion. Although benign in themselves, they may cause postoperative complications leading to pulmonary edema or cardiac failure. The congestive phenomena and perifocal splenization may be severe and violent after thoracoplasty and after apicolysis; they are likely to be less so after pneumothorax or pleuroscopy combined with cutting of adhesions. The only in vivo action of streptomycin seems to consist in reduction of the perifocal congestion of tuberculous lesions. Streptomycin is believed to have only a neutralizing biochemical action on the tuberculoid toxins which are responsible for the perifocal congestion.

Treatment with Streptomycin.—Morin treated 123 tuberculous patients with streptomycin at a sanatorium in Leysin (Switzerland). The grouping is based on the concept that tuberculosis is a cyclic disease: primary tuberculosis (6 patients), secondary tuberculosis (20 patients) and tertiary tuberculosis (97 patients). The density and poor blood supply of the lesions in primary infection prevent a favorable effect of streptomycin therapy. Treatment with streptomycin is the method of choice in secondary infection, such as meningitis, miliary tuberculosis and ocular tuberculosis. In tertiary tuberculosis streptomycin should be employed preferably for recent forms. It should not be regularly combined with artificial pneumothorax or thoracoplasty. Cavities may be treated locally with varying results. Streptomycin is useful in the treatment of tuberculous women during pregnancy or after childbirth. Tuberculous laryngitis presents a major indication for treatment with streptomycin, particularly for lesions localized high up in the larynx. Streptomycin therapy is indicated in superficial lesions of tuberculosis of the bronchi but not for stenosis. Resistance to streptomycin may be expected in two thirds of the patients after ninety to hundred and twenty days of treatment. Toxic reactions involving the eighth cranial nerve are not necessarily irreversible; they may be attenuated by the administration of promin® (sodium p,-p′-diaminodiphenylsulfone-N,N′didextrose sulfonate) and vitamin A. Streptomycin is a useful adjuvant but with limited possibilities; it cannot replace classic methods of treatment, particularly collapse therapy.

Deutsche medizinische Wochenschrift, Stuttgart

74:353-384 (March 25) 1949. **Partial Index**

Reform of Medical Education. V. von Weizsacker.—p. 353.
*Generalized Bacterial Infection in Malignant Diphtheria and Its Pathogenetic Significance. W. Arnold.—p. 356.
Possibilities of Prolonged Maintenance of Effective Concentration of Penicillin in Blood with Especial Consideration of Influence of Carinamide. W. Irmer.—p. 358.
Treatment of Osteomyelitic Bone Cavities. P. W. Springorum.—p. 360.
Epicondylitis of Humerus. F. Scheller.—p. 362.
Treatment of Brachialgia Paraesthetica Nocturna. W. Winkler.—p. 364.
Weakness of Uterine Contractions: Oral Treatment. B. Manstein.—p. 370.

Generalized Infection in Malignant Diphtheria.—The investigations described by Arnold were made during the wave of serious epidemics of diphtheria from 1943 to 1945. Forty-seven patients were examined postmortem. This number included 4 infants less than 1 year old, 31 children between 1 and 5 years of age, 2 between the ages of 5 and 15, 8 patients between 15 and 30, a 57 year old woman who had vaginal diphtheria and a 58 year old man with malignant pharyngeal diphtheria. Diphtheria bacilli were found in many internal organs, most frequently in the lungs, the regional lymph nodes and in the myocardium. The localization of the diphtheria bacilli in the internal organs is the result of bacteremia which is probably only temporary. Diphtheria bacilli of the gravis type have greater invasive power than those of the intermediate type. Bacillemia with diphtheria bacilli and the metastatic dissemination of the baccilli in the human organism are important processes in the course of diphtheria. Thus diphtheria is not merely an intoxication; in the cases of severe disease there exists a specific or mixed bacteremia.

Gynaecologia, Basel

127:137-200 (March) 1949. **Partial Index**

Modifications of Venous Pressure in Normal Parturient Women in the Course of Delivery. J. Snoeck and L. Martin.—p. 137.
*Hypochloremic Uremia During Pregnancy and Puerperium. G. A. Lindeboom.—p. 147.
Experimental Investigations on Pathology of Membranous Dysmenorrhea. L. Haxay and K. Rechnitz.—p. 169.

Hypochloremic Uremia During Pregnancy and Puerperium.—Lindeboom points out that vomiting as the main cause of hypochloremic uremia was first demonstrated on patients with pyloric stenosis. In such cases the chlorides of the blood plasma were decreased while the urea content and the alkali reserve were greatly increased. In hyperemesis gravidarum the loss of chlorides may be so great as to result in a dangerous hypochloremic uremia. He presents 9 cases of hypochloremic uremia that developed during pregnancy or puerperium. One of the patients died. In the majority the renal function had been impaired by chronic or acute disorders. In several cases the prolonged adherence to a saltless diet was an essential or the main cause of the disorder. It should be borne in mind that this diet is not always harmless but may be dangerous for some patients; the indiscriminate use of this regimen is not advisable. The blood urea content should be determined, so that a grave hypochloremic uremia can be prevented. In many cases of toxemia no such rigid diet is necessary. A salt-poor diet (i. e., saltless, but including milk, containing 1.5 to 2 Gm. of sodium chloride per liter) may be of value in cases of milder disease. Such a diet will not merely prevent salt deficiency but will assure a better protein supply.

Progrès Médical, Paris

77:113-136 (March 24) 1949

*Jennerian Vaccination and Wassermann's Reaction. V. de Lavergne, J. Watrin and J. Cauchois.—p. 123.
Macromolecules in Surgery; Second Part: From Acrylic to Alginates. J. Joublin.—p. 125.

Jennerian Vaccination and Wassermann's Reaction.—De Lavergne and co-workers subjected the serum of 9,842 Italian workmen, who were employed in French plants and lived in a lodging center, to Wassermann's test for syphilis. The reactions of 144 serum specimens (1.4 per cent) were found to be positive. The men were vaccinated against smallpox, and Wassermann's test was repeated within twenty-eight days after the vaccination. Of 108 serum specimens with negative reactions before the vaccination, 19 (17 per cent) showed positive reactions, with 14 weakly positive and 5 strongly positive. Of the 14 weakly positive, which had become positive as a result of the Jennerian vaccination, 11 turned negative spontaneously within 115 days, 1 turned negative in 117 days, 1 in 129 days and 1 in 165 days after the vaccination. The authors report the case of a girl aged 20 who was to be married; in accordance with the law, she was vaccinated against smallpox and had a Wassermann test for syphilis on the twenty-fifth day after the vaccination. The reaction was positive. The test was repeated ten days later by the same laboratory and by a second laboratory; both reactions were negative. The possible unfavorable consequences for the physician and for the laboratory in a case like this are evident. In order to prevent persons' being classified and treated erroneously as syphilitic, the Wassermann test should not be performed for control or prophylaxis of syphilis in persons who had been vaccinated against smallpox 8 to 150 days previously.

Book Notices

Cardiology. By William Evans, M.D., D.Sc., F.R.C.P., Physician to the Cardiac Department of the London Hospital, London. Cloth. Price, $7.50. Pp. 310, with 269 illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 49 E. 33d. St., New York.

This book opens with a discussion of the physical examination of the heart and blood vessels. Murmurs appear to be overemphasized while percussion has been tossed overboard and is replaced by roentgenograms. There is an excellent discussion of the arrhythmias including their electrocardiographic and clinical recognition. The author again belabors the circus movement of auricular fibrillation. A fair presentation of congenital cardiovascular disease follows but without benefit of angiocardiography. A chapter headed "endocarditis" considers the various forms of bacterial endocarditis as well as rheumatic heart disease, and not too well either. Acute rheumatic fever is discussed in somewhat less than two pages. The valvular lesions of rheumatic heart disease are dealt with more adequately although it is difficult to see why the treatment of one type of valve lesion should differ materially from that of another. The section on aortitis is good. Hypertension is discussed as a total entity. The treatment of essential hypertension is discussed rather cavalierly. Apparently the rice diet, the low sodium diet and even thiocyanate have not impressed this author. There is a good discussion of heart failure. The treatment of heart failure, which is set out in some detail, differs in many respects from the routine treatment employed in this country. It is pleasing to see such a critical discussion of the use of digitalis. Again the author appears unimpressed with the idea that salt restriction makes fluid restriction unnecessary in heart failure.

The discussion of cardiac infarction falls rather flat. The author considers sedation and rest the only things routinely needed. He fails to mention oxygen, coronary dilators or anticoagulants.

Further chapters deal with the heart in pregnancy and endocrine disorders; there is a final chapter on the lifetime prognosis in heart disease.

The book is interesting to read because it emphasizes the difference in point of view of the average American clinician and this British clinician. It will probably not find great favor in this country. The greatest criticism against the book is that it contains so little of the recent advances in diagnosis and treatment.

Isotopic Carbon: Techniques in Its Measurement and Chemical Manipulation. By Melvin Calvin, Professor of Chemistry, Radiation Laboratory, University of California, Berkeley, Calif., and others. Cloth. Price, $5.50. Pp. 376, with 107 illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C. 2, 1949.

One of the most difficult and yet important present day fields of research in which to obtain adequate technical information is that concerned with isotopes. The spectacular advances that have been made in many fields of science, principally biochemistry, leave the neophyte deeply impressed with the importance of this tool, and at the same time he is aware that his ignorance of the general principles and technics prevents him from applying these extremely useful isotopes to his own field of research. "Isotopic Carbon," by Calvin and others, is an exceptionally successful and well written manual for initiating the average investigator into the isotopic field. The book adequately describes the preparation of the carbon isotopes, their detection and instrumentation, and the methods employed in handling and preparing samples for analysis. There is also included a concise and accurate description of the methods of preparation of specific compounds, labeled with isotopic carbon, that have appeared in the literature as recently as April 1948. Methods for the degradation of compounds as well as biosynthetic procedures are described briefly but thoroughly, and in general there is no need to consult the original references. The appendix covers the statistical treatment of data and the mathematics of counter technics, which enhances the value of the book. It contains a wealth of original references, and the material is clearly and accurately presented with adequate illustrations and diagrams.

Physiology of Motion Demonstrated by Means of Electrical Stimulation and Clinical Observation and Applied to the Study of Paralysis and Deformities. By Dr. G. B. Duchenne (of Boulogne). Translated and edited by Emanuel B. Kaplan, M.D., Associate Orthopedic Surgeon of the Hospital for Joint Diseases, New York City. First English edition. Leather. Pp. 612, with 101 figures drawn after nature. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5, 1949.

Duchenne's classic book on the physiology of motion has been rendered into readable English by E. B. Kaplan, who deserves for this labor of love the thanks of anatomists, physiologists and physicians.

The use of the modern anatomic nomenclature increases the readability of this book. Duchenne's analysis of the physiology of movements should find many interested readers at this time, when, as a result of critical investigations of the English school (Walshe) and of experimental work of American investigators, our concept of the function of the motor cortex is greatly modified. The printing and binding add to the distinction of the work.

Social Science Research Council Annual Report 1947-1948. Paper. Pp. 73. Social Science Research Council, 230 Park Ave., New York 17, [n.d.]

This is the report of accomplishments of the past year and plans for the next year by the Social Science Research Council established twenty-five years ago to advance knowledge of human relations through scientific research. Beginning with a summary of the aims of the organization, the publication gives a brief idea of the way in which work is carried on and the specific types of problems handled. A large part of the expenditures is made through fellowships to research students interested in the problems of society which are considered of most vital importance.

The second part of the report does not attempt to give any information learned through studies of the past year, but makes available a complete list of publications and completed work by subject matter. Following this are lists of the fellowships and grants-in-aid awarded for the next year with the subjects for which awards were given. For those seeking information on the work done or in progress in the field of social science this should prove a clear and handy catalog to the current work of the council.

Diseases of the Ear, Nose, and Throat. By Douglas G. Carruthers, M.B., Ch.M., F.R.A.C.S., Consulting Ear, Nose, and Throat Surgeon, Canterbury District Memorial Hospital, Sydney. Second edition. Cloth. Price, $7. Pp. 344, with 140 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

This second edition of a textbook for students and practitioners is published in both the United States and Great Britain. It is well printed, on good paper, in type somewhat smaller than we are accustomed to. There are variations from American practice, but these are to be expected, and they are minor. In the handling of major subdivisions of the diseases under discussion, the approach is thoroughly acceptable, the language clear, and the illustrations unusually numerous and artistically as well as medically acceptable.

The advent of remedies such as the antibiotics and the sulfonamide compounds has profoundly changed the character of otolaryngologic practice. The course of numerous ailments and the performance of complicated operations connected with them have been much altered. The author recognizes this interval period and maintains an adequate description of the earlier state of affairs, thus permitting, in the best sense, a proper understanding of the unfolding of disease in these areas. This textbook must be judged as an acceptable contribution to its field.

Diseases of the Heart Described for Practitioners and Students. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician in charge of Department of Clinical Research, University College Hospital, London. Fourth edition. Cloth. Price, $4.50. Pp. 304, with 45 illustrations. The Macmillan Co., 60 Fifth Ave., New York; St. Martin's St., London, 1946.

This book is written essentially for the practitioner and student of medicine. It summarizes a lifetime of study of heart disease from both the research and the clinical point of view. With it all, Dr. Lewis was always a clinician. His passing removes one of the great students of cardiology. The principles stated in this work are basic and will not need revision for a long time. The book belongs in the library of every cardiologist as one of the classics.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST

AUREOMYCIN IN BRUCELLOSIS

To the Editor:—Does aureomycin afford the best means of treating chronic, low grade undulant fever showing positive skin reaction and agglutination for *Brucella abortus*?

M.D., California.

ANSWER.—The immediate results with aureomycin in bacteriologically proved cases of brucellosis have been more satisfactory than with other forms of available specific therapy. "Low grade undulant fever" has come to mean ill defined symptoms that may mimic neurasthenia, anxiety state or psychoneurosis. In these circumstances chronic brucellosis cannot be differentiated from psychosomatic dysfunction. A positive reaction to a skin test and agglutinins for Brucella not only may be associated with active disease but are also found in persons who have been exposed to brucellosis in the past and have recovered. It thus becomes extremely difficult to evaluate specific therapy in an illness of doubtful causation. Therefore, even if aureomycin is tried in these cases, the results are of questionable significance. As with other infectious diseases, accurate and dependable data on specific therapy can be obtained only with bacteriologically proved cases. On this basis, aureomycin is the most satisfactory agent available for acute and chronic brucellosis due to any one of the three species of Brucella.

ABSORPTION OF NICOTINE

To the Editor:—Can nicotine saturation of the body be determined?

Marvin Smith, M.D., Miami, Fla.

ANSWER.—Nicotine saturation of the body is a somewhat misleading expression. The body will continue to absorb nicotine to the point of fatality. The nicotine content of body fluids and tissues was determined in most of the older studies by bioassay technics which may be made specific but are usually not precise. Recent studies by the use of cyanogen bromide technics are more precise and may detect as little as 1 microgram of the alkaloid. This method utilizes the Beckman spectrophotometer and requires expert chemical performance.

After smoking, only a few micrograms of nicotine per cubic centimeter may be found in the blood. Somewhat higher concentrations of nicotine together with derivatives of nicotine are reported in the urine. Traces have also been described in the milk and other secretions.

FLUORIDE IN DRINKING WATER

To the Editor:—I am planning on putting sodium fluoride in drinking water for use of children. How much should I put in to give proper protection and to avoid danger of mottling of the teeth?

R. T. Treadwell, M.D., San Luis Obispo, Calif.

ANSWER.—It should be remembered that sodium fluoride is a poison; and even when the drinking water contains as little as 2 parts per million of fluoride (F), it may cause "mottling" of the teeth. The minimal threshold for dental fluorosis is 1 part per million of fluoride. Since the fluoride concentration must be adjusted carefully and it is comparatively difficult to do this when operating on a small scale, it is not advisable to attempt it. If a fluoride supplement is to be given, it should be under strict medical supervision and preferably to be prescribed in the form of tablets prepared by a reputable pharmaceutical house.

MOTION SICKNESS

To the Editor:—Is there any treatment for car sickness (automobile)? A patient, a 15 year old boy, who has to come to my office from a distant city each week is unable to get relief from this ailment.

William J. MacDonald, M.D., Boston.

ANSWER.—Sea sickness, car sickness and motion sickness are usually initiated from the internal ear, the eyes or the memory of past experience. Keeping the eyes closed and the stomach empty may in some persons aid toward prevention. Numerous drugs, such as "Mother Sill's Sea-Sick Remedy," have been advocated and tried for this temporary but distressing illness. Most of these remedies contain barbiturates or belladonna-like drugs. The United States Army Medical Department has recently announced the development of a new drug, dramamine,* (beta-dimethylaminoethyl benzohydryl ether 8-chlorotheophyllinate) that acts as both a cure and preventive of seasickness or motion sickness. The original research was done by Dr. Leslie N. Gay, of the Protein Clinic of Johns Hopkins University Hospital, Baltimore, and Dr. Paul Carliner, also of Johns Hopkins. Recent experiments showed almost total cure or prevention of seasickness among more than 400 passengers aboard an Army transport in heavy seas.

LIVER EXTRACT IN MULTIPLE SCLEROSIS

To the Editor:—Would you please list, if any, the deleterious effects of intensive and prolonged therapy with intramuscular liver extract. The patient, 32 years of age, with multiple sclerosis, has been receiving, biweekly, intramuscular injections of a concentrated liver extract solution containing 15 U.S.P. units per dose. Treatment has been constantly maintained for seven months. Are such large doses indicated or necessary for maintaining general nutrition in such a case? Would they in any manner tend to encourage the deposition of calcium in bursae, resulting in acute calcific bursitis?

M.D., Pennsylvania.

ANSWER.—There has been no clinical evidence found to date that intramuscular injections of liver extract causes or encourages the production or deposition of calcium. Your patient has received only fourteen injections thus far (one every two weeks). Liver was given in multiple sclerosis originally by Goodall and Slater (*Edinburgh M. J.* 43:368, 1936) because they felt that disseminated sclerosis is a deficiency disease. Your patient should be asked to eat ½ pound of liver three times per week as well as eggs, milk, fresh vegetables and fruit. This should be sufficient to maintain good nutrition. The liver extract is injected only because the patient cannot or will not eat liver.

HAZARDS OF BUTANE GAS

To the Editor:—Is there any menace to health in the domestic use of butane gas?

M.D., North Carolina.

ANSWER.—Butane gas in high concentration is a mild anesthetic, but chiefly is a simple asphyxiant of importance only as it replaces oxygen in the atmosphere. Obviously some danger from explosion and fire exists, but the real practical danger derives from the ready formation of carbon monoxide in the presence of incomplete combustion. All gas stoves should be vented and many fuel gases, including butane, should contain odorous warning agents. Cylinders of butane should not be located inside a dwelling but on the outside. Liquid butane if emitted in spurts from cylinders or gas line leaks may bring about immediate freezing with extensive tissue damage. Sensitization to butane has been reported, but this is subject to question. In general, the nontoxic properties of this gas are reflected in the statement that concentrations from 3 to 5 per cent may be breathed for long periods and for repeated periods without prospect of injury.

TYPHOID TREATMENT IN IRITIS

To the Editor:—Are typhoid inoculations of any value in the treatment of iritis?

Edward J. Grass, M.D., Grand Rapids, Mich.

ANSWER.—Typhoid injections frequently bring an acute attack of iritis to a prompt cessation but leave the causative factor unaffected, with the good possibility that the iritis will soon recur. When attacks recur it is important, though sometimes tedious and difficult, to locate and eradicate the cause. Causes include syphilis, tuberculosis, gonorrhea and so-called closed focal infections of the teeth, tonsils, sinuses, gallbladder and appendix.

BANTI SYNDROME

To the Editor:—A woman aged 46 died of Banti's disease twenty years ago. Recently her son, aged 32, died of the same disease. Is this a familial disease?

Angus A. Campbell, M.D., Toronto, Canada.

ANSWER.—The Banti syndrome has been noted in parents and children, but the occurrence is apparently rare. As the syndrome may result from a number of different causes, the presence of the symptoms in two members of a family need not be on a hereditary or familial basis.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

Vol. 141, No. 2
Chicago, Illinois
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September 10, 1949

TREATMENT OF MYASTHENIA GRAVIS

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Myasthenia gravis is a rare disease. Viets[1] has estimated that the total number of cases in the United States is about 1,500. In spite of this, there is widespread interest in the disease because of the challenge presented with regard to its cause and treatment, because of the complex nature of the pathologic physiology involved and because modern advances in biologic chemistry have afforded a new array of technics for its study. Consequently, there is considerable literature dealing with the condition from groups of investigators with widely differing interests and approaches.

CLINICAL FEATURES

The classic clinical picture of myasthenia gravis permits its easy recognition. The undue fatigue of voluntary muscles after exercise, their return to normal or near normal after rest, the absence of muscular atrophy, the mildness of symptoms in the forenoon as compared with the afternoon and evening, the variable clinical course which may be interspersed with spontaneous remissions and relapses and the failure on neurologic examination to demonstrate evidence of structural changes either in the central nervous system or peripheral nerves have enabled physicians accurately to diagnose the disease long before the advent of specific measures for its detection.

The muscles most frequently affected are those concerned with extraocular movements, the involvement of which results in ptosis, strabismus and diplopia in approximately 60 per cent of cases. Then in order of frequency occur generalized weakness, weakness of the extremities, dysarthria, dysphagia, difficulty in mastication, weakness of the facial muscles and weakness of the muscles of the neck. There may be many variable combinations of muscle group weakness which may show shifting from one set of muscles to another as the disease progresses. Untreated, the disease runs a fatal course in 50 to 75 per cent of cases in a few years, but under present methods of therapy the mortality rate is probably about 10 per cent.[1] Death usually results from respiratory paralysis or bronchopneumonia of the aspiration type.

DIAGNOSIS

To make the diagnosis certain, several highly specific procedures are available. The most satisfactory of these is the intramuscular administration of 1.5 mg. neostigmine methylsulfate with 0.65 mg. atropine sulfate, to prevent gastrointestinal symptoms, according to the plan devised by Viets.[2] Recently Tether[3] has recommended that the diagnostic test be performed by giving 0.5 mg. of neostigmine intravenously instead of 1.5 mg. intramuscularly. He believes that the intravenous method gives superior results. These tests will result in the abolition of symptoms, or in severe cases their decided amelioration, in from fifteen to thirty minutes by the intramuscular route or in five minutes by the intravenous method. In no other form of muscular asthenia does a response of comparable magnitude occur after the injection of neostigmine. In patients with difficulty in swallowing the correction of the weakness of the pharyngeal muscles by this method can be observed by fluoroscopy of the pharynx in its response to orally administered barium.

Harvey and Whitehill[4] have shown that quinine administered orally intensifies the myasthenic state. This test is especially useful in mild cases, in which it may be difficult to demonstrate classic muscular weakness. As final proof of a diagnosis so established, neostigmine may then be given and its obliteration of the induced asthenia observed.

The great sensitivity of the myasthenic muscles to curare was reported by Bennett and Cash[5] in 1943. They found that one fifth of the usual adult dose of d-tubocurarine chloride would cause an appreciable degree of weakness in doubtful cases. While this method is of value, it should be added that it carries a slight but definite hazard. Again, effects of curare may be reversed by neostigmine. Much safer is the diagnosis arrived at from the history, the physical examination and the response to neostigmine, which seldom fail to provide all the information that is required for complete diagnostic accuracy.

PATHOLOGIC PHYSIOLOGY

The cause of myasthenia gravis is unknown. The observation of collections of cells indistinguishable from lymphocytes, so-called "lymphorrhages," in and about muscle fibers and in other structures, notably the adrenal cortex, has been reported by several observers.[6]

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Read before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1949.

[1] Viets, H. R.: Diagnosis and Treatment of Myasthenia Gravis, Postgrad. Med. **4:** 55 (July) 1948.

[2] Viets, H. R., and Schwab, R. S.: The Prostigmine Test in Myasthenia Gravis: Second Report, New England J. Med. **215:** 1064 (Dec. 3) 1936.

[3] Tether, J. E.: Intravenous Neostigmine in Diagnosis of Myasthenia Gravis, Ann. Int. Med. **29:** 1132 (Dec.) 1948.

[4] Harvey, A. M., and Whitehill, M. R.: Quinine as an Adjuvant to Prostigmine in the Diagnosis of Myasthenia Gravis: A Preliminary Report, Bull. Johns Hopkins Hosp. **61:** 216 (Sept.) 1937.

[5] Bennett, A. E., and Cash, P. T.: Myasthenia Gravis: Curare Sensitivity; a New Diagnostic Test and Approach to Causation, Arch. Neurol. & Psychiat. **49:** 537 (April) 1943.

[6] Wilson, S. A. K.: Neurology, London, Edward Arnold & Co., 1940, vol. 2, p. 1601.

Since these cells are not present in all cases their significance is uncertain. Similarly, hyperplasia of the thymus gland and thymic tumors have been observed in about 50 per cent of cases of myasthenia gravis,[7] but the assignment of an etiologic role to dysfunction of the thymus gland, has, as yet, failed to meet critical requirements.

The present concept of the mechanism operative in myasthenia gravis is related to an alteration in physicochemical changes that initiate muscular contraction. It is generally accepted that when a nerve impulse reaches the myoneural junction acetylcholine is liberated, and this substance initiates muscular contraction. Simultaneously, an enzyme, cholinesterase, quickly hydrolyzes the acetylcholine and destroys any further activity. In myasthenia gravis there is an imbalance in the acetylcholine-cholinesterase reaction, so that acetylcholine is prevented from exerting a normal effect. This could result from a decrease in the amount of acetylcholine, an increase in the amount of cholinesterase or other as yet unknown factors. The evidence is inconclusive. Furthermore, the studies of Nachmansohn [8] have indicated that the "acetylcholine cycle" actually consists of a multiplicity of reactions in which the interaction of acetylcholine and cholinesterase is only a part. For the moment we must be content to subscribe to the view that the existence of an abnormal relationship between acetylcholine and cholinesterase gives rise to the weakness and excessive fatigability that characterize this disease. This concept has led to a rational and reasonably satisfactory approach to therapy. It is to be hoped that further laboratory investigation in neuromuscular function will add knowledge that will allow an exact and more detailed understanding of the changes observed in myasthenic patients.

TREATMENT

Prior to the discovery of the profoundly ameliorating effects of neostigmine in myasthenia gravis, treatment of the disease was extremely unsatisfactory, with the consequent high mortality previously mentioned. In 1930 Harriet Edgeworth,[9] herself a victim of myasthenia, reported the beneficial effect of ephedrine sulfate, and even today this drug may at times be profitably employed as an adjunct to neostigmine. Its estimated effectiveness, 10 to 15 per cent that of neostigmine,[10] greatly limits its usefulness. The mode of action of ephedrine is imperfectly understood. It apparently has no action on the acetylcholine-cholinesterase balance but probably acts directly on the tonicity of skeletal muscle. The dose is usually 10 to 30 mg. given orally two or three times daily.

In 1932 Boothby [11] observed that in cases of severe myasthenia gravis there were negative balances for nitrogen, sulfur and phosphorus (as there are in many debilitating diseases). He further showed that there was often a pronounced decrease in creatine excretion. Stimulated by the improvement in the negative nitrogen, sulfur and phosphorous balances and the increased excretion of creatine following the administration of large amounts of the amino acid glycine, he employed glycine in the treatment of patients with myasthenia gravis. In 1936 [12] he stated that the glycine treatment caused "some improvement in nearly all cases and marked improvement in many." Similar results have not been obtained by others, and at present glycine therapy may be regarded only as an interesting historical milestone in the development of current methods of treatment.

Although aectylcholine is the chemical agent that stimulates muscle contraction, it is also known that in some manner potassium ions are concerned with the liberation of acetylcholine, that they may exert a direct stimulating effect and may enhance the action of acetylcholine.[13] On this basis potassium, usually as the chloride or citrate salt, has found its way into the treatment of myasthenia gravis. Wilson and Wright,[14] who in 1927 were the first to suggest the use of potassium, did so on the hypothesis that the ion exhibited a "total decurarizing action." It is generally admitted that potassium salts in doses of 10 to 50 Gm. daily do ameliorate the symptoms of myasthenia gravis, but the effect is seldom sufficient to completely relieve them.

Guanidine hydrochloride has been the subject of investigation in treatment of myasthenia gravis since the publication of a favorable report by Dodd, Riven and Minot [15] in 1938. Guanidine is closely related chemically to creatine and creatinine and has been claimed to possess "a decurarizing action" in myasthenic persons. It is administered in a dosage of 20 to 30 mg. per kilogram of body weight daily in three divided doses. Unquestionable improvement follows in a small percentage of patients, possibly in those showing a low excretion of creatinine;[16] but entirely satisfactory results are so infrequently obtained that there is little justification for its employment.

In 1939 Blalock [17] began an investigative study of the effect of thymectomy in myasthenia gravis. His reports stimulated similar efforts both here and abroad, so that there are now available for analysis well over 100 reported cases in which the operative procedure has been performed. The results are difficult to interpret, because there is complete lack of correlation between the pathologic observations in removed thymus glands and the results on the course of the disease. About 50 per cent of patients appear to have derived benefit from the operative procedure, in that they require less neostigmine postoperatively. A small percentage is reported to be well. Nevertheless, thymectomy is a formidable surgical procedure, patients with myasthenia gravis are poor operative risks and precise indications for the operation are difficult to determine.

The year 1935 marked the beginning of a new and significant era in the study and treatment of myasthenia gravis. This is due to the observation of Mary Walker in 1934 [18] that the muscular weakness of myasthenia gravis is clinically identical with that of curare poisoning. She hypothecated, therefore, that the weakness should be relieved by physostigmine salicylate, and a therapeutic trial proved that it was. She then suggested[19] that the analogue of physostigmine, neostigmine, might prove even more efficacious, and it did. Since these reports, numerous studies made in many laboratories and clinics have established a firm foundation for the neostigmine therapy of the disease. It is not an exaggeration to state that the discovery of the effectiveness of neostigmine in this disease accomplished as much for the patient with myasthenia gravis as the discovery of insulin did for the person with diabetes. Not only has it greatly improved the formerly pitiable condition of patients afflicted with the disease, but its advent has stimulated a large amount of chemical, physiologic and clinical research that gives promise of continuing therapeutic progress in myasthenia gravis in particular and in muscular disease in general.

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[8] Nachmansohn, D.: Acetylcholine and the Mechanism of Nerve Activity, Exper. Med. & Surg. **1:** 273 (Aug.) 1943.

[9] Edgeworth, H.: A Report of Progress on the Use of Ephedrine in a Case of Myasthenia Gravis, J. A. M. A. **94:** 1136 (April 12) 1930.

[10] Viets, H. R.: Myasthenia Gravis, J. A. M. A. **127:** 1089 (April 28) 1945.

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[12] Boothby, W. M.: Myasthenia Gravis, in Medical Paper Dedicated to H. A. Christian, Baltimore, Md., Waverly Press, Inc., 1936.

[13] Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Company, 1940, pp. 596-597.

[14] Cited by Krantz and Carr,[16] p. 629.

[15] Dodd, K.; Riven, S. S., and Minot, A. S.: Further Experience with the Use of Guanidine Hydrochloride in the Treatment of Myasthenia Gravis, Am. J. M. Sc. **202:** 702 (Nov.) 1941.

[16] Krantz, J. C., Jr., and Carr, C. J.: Pharmacologic Principles of Medical Practice, Baltimore, Md., Williams & Wilkins Company, 1949, p. 630.

[17] Blalock, A.: Thymectomy in the Treatment of Myasthenia Gravis: Twenty Cases, J. Thoracic Surg. **13:** 316 (Aug.) 1944.

[18] Walker, M. B.: Treatment of Myasthenia Gravis with Physostigmine, Lancet **1:** 1200 (June 2) 1934.

Neostigmine combines with and inactivates cholinesterase. This effect lasts for one to several hours, varying with the severity of the disease. If the dosage is properly regulated as to amount and spacing most patients are able to obtain a more or less continuous remission of symptoms and to lead normal or nearly normal lives. In 85 per cent of cases, oral administration of neostigmine bromide is effective, but in severer disease hypodermic administration of neostigmine methylsulfate—along with the oral dosage—is necessary. In the stage of crisis intravenous neostigmine is indicated and can be given in large amounts, up to 30 or more mg. each twenty-four hours in hourly doses.

However, there are some inadequacies of and disadvantages to neostigmine therapy. Its action is relatively short, it may produce toxic symptoms and it is fairly expensive. In spite of careful regulation of dosage and administration of the drug in large amounts, some patients cannot be completely relieved of symptoms, or their control may be so erratic that normal activities are denied them. For these reasons the search is continued for newer agents that may have fewer objections.

In the past few years three chemical compounds known to have strong cholinesterase-inhibiting properties have been studied: diisopropylfluorophosphate, hexaethyltetraphosphate and tetraethylpyrophosphate. The effect of the first compound has been studied by Comroe,[20] Harvey[21] and others.[22] As a result, it may be stated that this chemical in doses of 2 to 3 mg. administered intramuscularly once or twice a week is capable of exerting a profoundly inhibitory action on cholinesterase, even reducing the plasma level of the enzyme to zero. However, the results in patients are less favorable than those obtained with neostigmine, and unpleasant side effects are encountered much oftener. It is believed, therefore, that diisopropylfluorophosphate is unsuited for the treatment of myasthenia gravis.

Westerberg and Luros[23] reported the trial of hexaethyltetraphosphate (at least 85 per cent of which is tetraethylpyrophosphate[24]) in 4 cases. The drug was given intramuscularly in doses of 10 to 12 mg. every three to five days with resultant improvement. It was impossible to fully control symptoms in any case without the simultaneous use of neostigmine, but the amount of neostigmine required was smaller than when neostigmine alone was used.

Tetraethylpyrophosphate is a colorless liquid miscible with water, acetone, alcohol, glycerin and propylene glycol. It is hygroscopic and is readily hydrolyzed to inert diethyl acid phosphate. For oral administration it is mandatory that the compound be prepared in a form that protects it from contact with moisture. We have found that a 1 per cent solution in anhydrous propylene glycol put up in 10 to 20 cc., tightly capped and waxed, dark glass vials has been fairly satisfactory. It is hoped, however, that there will soon be available either glass ampules or air-tight gelatin capsules of this preparation which will reduce to a minimum the problem of hydrolysis.

In April 1948, Burgen, Keel and McAlpine[25] in England first reported the use of tetraethylpyrophosphate in 3 cases of myasthenia gravis. With administration to the patient of 8 to 12 mg. of the compound per day in two or three divided oral doses they were able to induce complete relief of symptoms. Harvey[26] published the results of his observations in 7 patients treated with the drug in November 1948. He found that the average daily dose of 15 mg. in two or three divided oral doses produced an effect similar to that produced by the optional dosage schedule of neostigmine in the same patients. Maximum depression of plasma cholinesterase occurred within one hour after the administration of the compound, and the relief of symptoms was maximally sustained for twelve hours. After that the effect declined, but a slight depressant effect on cholinesterase continued for as long as sixteen days. Harvey further showed that when neostigmine is given shortly before tetraethylpyrophosphate there is a blocking action on the anticholinesterase action of the latter. In other words, the cholinesterase-neostigmine combination protects the enzyme from the inhibiting action of the compound. This is of importance in the treatment of those patients whose requirements are best served by the combined use of the two drugs. For complete effectiveness, the tetraethylpyrophosphate should be administered one hour or more before the neostigmine.

Stimulated by the English report we have been using tetraethylpyrophosphate for the past year. To date there are 8 patients under treatment. Four patients are now normal; 2 are greatly improved, almost normal, and 2 are classified as moderately improved. The last 2 patients still require some neostigmine; in 1 case 60 mg. a day and in the other 150 to 200 mg. a day. In both instances the current dose of neostigmine is roughly one third of the amount required before the administration of tetraethylpyrophosphate.

Our results have indicated that the full therapeutic dose of this compound is between 13 and 17 mg. per day in two, or occasionally three, divided doses. All anticholinesterase substances produce a characteristic group of toxic symptoms when given in excessive

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amounts. These symptoms are muscle fasciculation, accommodation spasm, miosis, abdominal cramps, diarrhea, lacrimation, perspiration, salivation, nausea, vomiting, restlessness and bradycardia: all are relieved by atropine. Although tetraethylpyrophosphate in too large a dosage gives rise to all these symptoms, as do other agents of similar action, there is one notable difference. In neostigmine toxicity, abdominal cramps are conspicuous, but they are seldom seen in toxic reactions from tetraethylpyrophosphate. In case of toxicity due to the latter compound a bradycardia of 40 was relieved by administration of 0.11 mg. atropine sulfate intravenously, while in another instance a convulsive seizure lasting one minute and followed by a brief period of unconsciousness was promptly relieved by 0.65 mg. atropine sulfate given intramuscularly. In the latter case the pulse rate dropped to 56 per minute and the electrocardiogram showed depressed S-T segments and low voltage of T waves in all leads. These results are similar to those reported by Salerno and Coon[27] in toxicity studies with this drug in dogs.

We have administered the compound in the following manner. In order that accurate dosage prevail, the 1 per cent mixture was withdrawn from the container into a tuberculin syringe just prior to its administration. It was dispensed into a glass of water or milk and given with or shortly after food to avoid nausea and other toxic manifestations. Since most of the patients in our series have previously been treated with neostigmine, we have planned to gradually diminish the amount of neostigmine and at the same time give increasing doses of tetraethylpyrophosphate, keeping in mind the necessity for giving the drug sometime before administration of the neostigmine. A satisfactory transfer of a patient from neostigmine to tetraethylpyrophosphate may be effected by giving the latter in doses of 2 to 3 mg. with breakfast and supper, that is, at about twelve hour intervals, increasing the amount on the second or third day until a dose of 8 to 12 mg. per day is reached. Neostigmine is allowed meanwhile, according to the need as evidenced by recurring weakness. Usually when a dose of 8 to 12 mg. of tetraethylpyrophosphate is reached neostigmine therapy may be discontinued. From then on, the dosage of tetraethylpyrophosphate is cautiously increased by adding 0.25, 0.5 or 1 mg. daily until there is maximum relief of symptoms without toxic effects. However, we have occasionally observed toxic symptoms as long as three to seven days after the last dosage increase, due to a cumulative effect which necessitated a downward readjustment.

In our experience with this drug the difference between the dose required to produce a maximal response and that which gives rise to toxic symptoms has been within a remarkably narrow range, from 0.5 to 3 mg. This is true regardless of the severity of the disease, duration of the disease, the age, body weight and sex or the previous neostigmine requirement. Since the intensity of symptoms tends to fluctuate spontaneously in patients with myasthenia gravis, it follows that individual adjustment of the dosage of tetraethylpyrophosphate is to be expected. Intelligent and cooperative patients may be taught to do this themselves.

Following are illustrative cases of the types encountered in our study.

REPORT OF CASES

Case 1.—W. L., a married Negro woman aged 30, mother of six children, in June 1948 began to have attacks of generalized weakness accompanied with ptosis of the eyelids and difficulty in chewing, talking and swallowing. During August, September and October, 1948, she had several severe attacks of respiratory distress. She was referred to the John Sealy Hospital in November 1948, in the eighteenth week of pregnancy, because she was doing poorly on a regimen of 75 mg. of oral neostigmine daily. Treatment was initially carried out with neostigmine bromide in amounts up to 450 mg. per day. Difficulty in swallowing, generalized weakness and ptosis persisted. The medical regimen was changed to tetraethylpyrophosphate, the required dosage of which was 14 mg. per day in two divided doses. On this regimen she became completely normal. During the last week of pregnancy it was necessary to reduce the dose to 13 mg. per day, because of nausea and vomiting. She was normally delivered of a full term female infant weighing 2,500 Gm. on April 19, 1949. The infant had symptoms of severe myasthenia; inability to nurse, regurgitation of milk through the nose and expressionless facies. These symptoms were promptly ameliorated on the third day by administration of neostigmine methylsulfate 0.07 mg. intramuscularly. Remission was maintained by 2 mg. of neostigmine bromide given orally every three hours for one day, then by 1 mg. every three hours for thirteen days, at the end of which time it was possible to discontinue all medication without return of symptoms. The mother remained normal on a regimen of 13 mg. of tetraethylpyrophosphate daily.

This case is a striking example of one that cannot be completely relieved by treatment with neostigmine; however, a return to a symptom-free status is easily effected by tetraethylpyrophosphate therapy.

Case 2.—O. V., a married white man aged 24, had had myasthenia gravis for eight years and had been treated in the John Sealy Hospital in 1943. Therapy consisted of 90 to 150 mg. neostigmine bromide and 25 mg. of ephedrine sulfate twice daily with incomplete relief, evidenced by a nasal voice, dysphagia, diplopia, ptosis, and postexertional weakness. He was readmitted to the hospital Dec. 8, 1948 and stabilized on 16.8 mg. of tetraethylpyrophosphate per day. His only remaining symptoms were a nasal voice and mild dysphagia. His strength was sufficient for him to do hard manual labor in the oil fields. Subsequently, he has been maintained on 15 mg. of the drug per day with further improvement of symptoms.

This case emphasizes the following points:

1. This patient was unable to afford adequate doses of neostigmine.
2. Relief of symptoms was more complete on tetraethylpyrophosphate than with neostigmine.
3. Although greatly improved, he is not entirely normal.

Case 3.—B. P., a married Negro woman aged 18, noted the development of generalized weakness, ptosis and difficulty in chewing and swallowing in January 1948. She was admitted to the John Sealy Hospital in March 1948. Definite improvement occurred on neostigmine therapy, but despite a daily dose of 1,260 mg. of the drug orally, weakness was so great that she could not walk without holding to her bed. After a six week period of observation, thymectomy was performed, followed by a stormy postoperative convalescence. In the critical period use of a respirator was required and neostigmine methylsulfate in doses as high as 336 mg. intramuscularly in a twenty-four hour period was given. She gradually improved and was put on a regimen of tetraethylpyrophosphate 10 mg. per day with 300 mg. neostigmine orally per day. On this regimen she could eat well and could walk the length of the ward. She was discharged in June 1948 and was readmitted in October 1948. It was found that she could tolerate 16.8 mg. of tetraethylpyrophosphate per day, but she still had some generalized weakness. At higher dosage levels she had toxic symptoms. Finally it was found that the addition of 60 mg. neostigmine bromide enabled her to be up and around almost at will. She was last seen in the outpatient clinic in April 1949. On this regimen she stated that she could do her housework but could walk only short distances. There was no difficulty with mastication or deglutition.

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[27] Salerno, P. R., and Coon, J. M.: A Pharmacologic Comparison of Hexaethyl Tetraphosphate (HETP) and Tetraethyl Pyrophosphate (TEPP) with Physostigmine, Neostigmine and DFP, J. Pharmacol. & Exper. Therap. **95**: 240 (Feb.) 1949.

This case is illustrative of the type that cannot be adequately controlled by either neostigmine or tetraethylpyrophosphate alone but that can be assured a reasonably satisfactory remission of symptoms on combined therapy.

COMMENT

Advances of considerable importance have been made in the understanding and treatment of myasthenia gravis. Yet much remains to be done if there is to be available a complete knowledge of the causes that are operative in disturbing acetylcholine-cholinesterase balance and causing the clinical picture of the disease. A full understanding of all aspects of normal and abnormal muscle metabolism are prerequisite to the solution of the etiologic basis of myasthenia gravis. When this information is available, there will doubtless evolve methods of treatment founded on a firmer basis than current concepts permit.

SUMMARY AND CONCLUSIONS

1. The medical treatment of myasthenia gravis is based on the principle of continuous cholinesterase inhibition at a level consistent with relief of symptoms but without evidences of toxicity. It is a type of substitution therapy and as such must be continued indefinitely.

2. Beyond doubt mild cases, as well as those of greater severity, that can be well controlled with neostigmine (assuming that relatively high cost is not a factor) are best treated with neostigmine.

3. Severe disease and disease of moderate severity in which there is failure to obtain complete relief from neostigmine can be treated with and may be adequately controlled by tetraethylpyrophosphate. In some instances this drug is definitely superior to neostigmine.

4. A small percentage of cases not responding well to either tetraethylpyrophosphate or neostigmine may be stabilized better on combined treatment with the two drugs.

5. The greatest handicap in the use of tetraethylpyrophosphate is the difficulty of adjusting the dose so that complete relief of symptoms is obtained without the production of toxic symptoms, owing to the narrow range that divides the therapeutic from the toxic dose.

6. Atropine is a physiologic antagonist to tetraethylpyrophosphate and should be used if toxic symptoms occur.

7. Ephedrine sulfate, potassium salts and guanidine hydrochloride may occasionally fill the role of helpful supplemental agents to neostigmine or tetraethylpyrophosphate, but seldom does any of the three meet full therapeutic requirements. Glycine is of no value.

8. Thymectomy is still an incompletely appraised procedure which, in our opinion, should be reserved for those cases that defy control by other measures or in which a thymic tumor is known to be present.

2201 Market Street (Dr. Stone).

ABSTRACT OF DISCUSSION

DR. DAVID GROB, Baltimore: We have had an opportunity to administer tetraethylpyrophosphate to 12 myasthenic patients for periods up to one year, and our conclusions have been in general similar to those of Dr. Stone. Six of our patients were able to tolerate the compound and have preferred this drug to neostigmine because of the prolonged increase in muscular strength which it provides throughout the day and night. However, although the increase in muscular strength has been more prolonged after tetraethylpyrophosphate than after neostigmine, the maximum degree of motor power has usually been about the same after both of these compounds. In general, muscles that have responded poorly to neostigmine have also responded poorly to tetraethylpyrophosphate, and to this drug followed by neostigmine. Six patients were unable to tolerate tetraethylpyrophosphate. In 4 there developed moderately severe muscarinic and central nervous system symptoms which could not be fully controlled by large doses of atropine, while profound muscular weakness developed in 2 after an overdose of tetraethylpyrophosphate. This effect of an excess of anticholinesterase agent resembles the effect of anticholinesterase agents in normal subjects and was also seen in 3 myasthenic patients who received neostigmine while they were at maximum strength after tetraethylpyrophosphate therapy. In contrast, when neostigmine was administered at a time when the strength was below maximum, subsequent to tetraethylpyrophosphate, the effect of the neostigmine was usually potentiated. Although the ability of the former drug to restore power to myasthenic muscles bears a general resemblance to the effects of the latter, certain differences must be noted, in addition to the more prolonged action of tetraethylpyrophosphate. A large initial dose of this drug, about three times the daily maintenance dose, is required before its physiologic effects are produced, and if the maintenance dose is omitted for several days a large initial dose must again be given. The range of effective maintenance dose of the agent between that which produces no observable effect and that which causes distressing symptoms is exceedingly narrow. Extreme caution is required in the regulation of myasthenic patients with tetraethylpyrophosphate. It appears to exert its effects by depressing the cholinesterase activity of the tissues below a threshold at which changes in function begin and by maintaining this degree of depression. These characteristics of the action of tetraethylpyrophosphate are in contrast to those of neostigmine and suggest that there may be a qualitative as well as a quantitative difference in the mode of action of these compounds.

DR. CHARLES T. STONE, Galveston, Texas: I am in agreement with most of the points made by Dr. Grob, some of which have been discussed in the paper. I should like to emphasize two of the important toxic effects of tetraethylpyrophosphate, which are dramatic and which may be serious. The first of these is bradycardia, which, if sufficiently severe, may cause symptoms similar to those occurring in complete auriculoventricular dissociation. The second is convulsive seizures of an epileptiform type, which occurred in 1 of our cases. Fortunately, these severe symptoms are promptly relieved by the intravenous administration of atropine. In the electrocardiogram the toxic manifestations may be evidenced by depressed S-T segments and low voltage of T waves in all leads. These observations are identical with those reported by Coon of the University of Chicago in his toxicity studies with tetraethylpyrophosphate in dogs. Situations of this nature demand that the utmost caution be exercised in the employment of this drug until some of the difficulties incident to its use have been eliminated. Tetraethylpyrophosphate is powerful and dangerous. Its use to date has extended slightly more than a year, and only a relatively small number of patients have been treated with it. Therefore it is still in the experimental stage and should not be employed unless one is cognizant of the difficulties that may develop incident to its administration and unless measures are immediately available for the correction of toxic symptoms which it may produce.

THE PREPSYCHOTIC AND EARLY PSYCHOTIC SEE THE FAMILY PHYSICIAN OR INTERNIST FIRST

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and
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Salt Lake City

The reduction of the enormous amount of personal and social suffering due to psychoses is an urgent medical challenge. We have left to psychiatrists, pitifully few and all too inadequate in terms of needs, this major problem of human sacrifice. The coming generation of physicians may include in their armamentarium an understanding of psychodynamics. It might be well for the rest of us to arouse enough interest in the psychoses to give our patients a modicum of understanding. Anything less may produce a dangerous scotoma.

Regardless of his interests, no physician is immune from contact with psychoses. The doctor who complacently refuses to be concerned may find himself appealing for help when his aged father experiences hallucinations, his postpartum patient obeys a command over the radio to jump out of the window or the patient on whom he refused to perform a surgical operation enters the office with a .38 automatic in his hand.

Even the clinical pathologist may be called on to make repeated serologic tests for syphilis by a self-accusatory, depressed patient.

H. L. took his four children across a street for ice-cream cones. The daughter, 3 years of age, ran in front of a car and was killed. Shortly thereafter the patient became depressed and unable to work. His mind turned to a sexual dereliction of a year previous, and he became obsessed with fear of a venereal disease. He visited a number of physicians and laboratories for blood tests, all of which gave negative reactions, and he finally interfered with his wife's housework by constantly demanding that the whole family go to the laboratory for tests. Fortunately the next internist who saw him arranged for a successful course of electric shock treatments.

Study of the evolution of psychoses, particularly with analytic methods, has helped to elucidate the mechanism by which the distorted thought processes take place. Perhaps of even greater practical value is the contribution of child development studies, examining the effect of continuous personal, family and school pressures. Those who have been searching for a single traumatic event to explain the patient's psychopathology may well look for these continuous pressures instead. The impact of watching the primal scene, an event so cherished by the analysts, may have less effect on the child than the way his mother is greeted by his father after a hard day at the office.

Somewhere in the course of the psychoses must be a stage where we can increase our influence for the good. When the onset is abrupt, the patient may fall into psychiatric hands rapidly, but too often an insidious onset may involve the patient with the family physician, unsatisfactorily, for months or years. Unfortunately, many members of the medical profession think of psychoses in terms of deteriorated schizophrenic persons in the back wards of state hospitals, not remembering that such is the end result of a process which might have been controlled had it been recognized earlier.

Popular impression is that shy, withdrawn, daydreaming children are more apt to become schizophrenic than are aggressive, out-going, active children. This may prove to be a myth.

The first warning sign often occurs as an adolescent failure of socialization. The major break with reality may come at the time of facing new sexual, social or economic responsibility. Probably 5,000,000 subclinical schizophrenic subjects live in society without major friction; often they are obscure persons in small jobs, nursing some particular maladjustment, on the fringe of reality, for the most part keeping out of trouble.

For the 300,000 schizophrenic persons who have broken overtly with reality and are confined to designated hospitals, we are obliged to be alert for possible contributions from medical science.

With those entering the psychoses (schizophrenia takes an annual toll of 150,000) we are more directly concerned, for many of them will seek help from physicians; hence, the first opportunity and responsibility for appropriate diagnosis and guidance into proper hands lies with us. The presenting symptoms often lead the patient to the doctor's office and the doctor on a futile chase until the basis for the symptoms is discovered in the psychic structure of the patient. Among these symptoms are those due to excessive awareness of physiologic activity, disturbed interpretation of physiologic activity and disturbed physiologic activity due to alterations in the central integrative levels of the autonomic nervous system.

In our society a person with disturbed ideas and physical symptoms visits the physician for relief of his symptoms. Despite our apparent sophistication, ideas of demonic possession, punishment for sin (of the patient or his forebears) or moral weakness pervade our concepts of mental disease. And there is a prevalent willingness to attribute all physical symptoms and even behavior and personality problems to lack of vitamins, or nutritional anemia. Even though the patient's thoughts or behavior are so bizarre that he or the family may realize the need for psychiatric attention, the physician is usually consulted first. Organic disease is, for the most part, socially acceptable —mental disease is not. Going to the family physician or medical specialist carries social approval and may even be a prestige-seeking measure. A visit to a surgeon even carries glamor. But any one who goes to a psychiatrist "must be nuttier than a fruit cake."

Particularly in depressions are the physical changes apt to be prominent: loss of weight, anorexia, digestive difficulties, weakness, fatigue, sleep disturbances, aches and pains, altered sexual and menstrual functions. Hence the symptoms lead the patient to the family physician. If a specialist is sought, the symptoms are of a nature most apt to fall in the field of the internist (as contrasted to the acute, dramatic symptoms of the hysterical patient, often referred to the surgeon).

In many communities, and even in one whole state, there are no psychiatrists in private practice, hence the physician may be the only "psychiatrist" available.

The history taking of prepsychotic or early psychotic patient is an interesting experience. In the schizophrenic person the difficulty in communication soon becomes obvious. By ordinary standards the history may be vague, confused and fragmentary, a maze of minor flights without a central theme. But the very nature of the history may be the best diagnostic

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From the Salt Lake Clinic.
Read before the Section on Internal Medicine at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

clue to the disordered thought processes. The history of a depressed patient may be an endless list of complaints. Attention to the way the patient feels about each complaint is often a valuable clue, as is the observation of the behavior of the patient during the interview.

The question and answer type of history is less valuable than an effort to draw out the history of the patient with sympathetic, interested encouragement. Certain questions often have to be asked, particularly about hallucinatory experiences, thoughts of suicide or ideas of reference or influence. Direct, blunt questions, as "What are the voices saying?" may impair an already tenuous rapport.

A few moments with a responsible relative of the patient may be enlightening.

The physical examination may be sterile of results, except in those psychoses with associated organic disease, yet a neglected, incomplete or sketchy physical examination is a serious mistake. The patient's behavior during the examination may be of utmost importance.

Since both the history and physical examination are time consuming and somewhat subjective, there may be a temptation to skip over both as rapidly as possible, and, like the fat man in the art gallery who brushes the attendant aside and asks, "where are the nudes?" the physician may exhibit premature interest in the "scientific" disciplines.

A relatively small percentage of patients have psychoses diagnosable by laboratory methods, but those should not be overlooked (particularly bromide intoxication), and fewer by roentgenologic methods (e. g., the psychoses often associated with post-traumatic subdural hematoma).

If we depend unduly on laboratory diagnosis we may find some slight deviation from normal of the white blood cell count, the alkaline phosphatase or the blood rhubarb titer. And if the diagnosis and regimen of therapy are unsuccessful in relieving the psychotic symptoms, we are apt to make repeated excursions through the laboratory, the x-ray office or the pharmacopeia, the patient winding up with his psychosis intact, a fixation that the condition is organic (even if undiscovered), with a stack of roentgenograms, a sheaf of laboratory reports, a pocketful of bills, a firm appreciation of the high cost of medical care and an appointment with a chiropractor.

Certain clues, although not diagnostic of schizophrenia, may serve to heighten our suspicion:

1. Inability to communicate—the feeling of talking at the patient, not to him.
2. A list of symptoms that fall through the grasp like water from a sieve, or a list of symptoms so bizarre that no one syndrome could explain all of them and no one organ could be capable of so much mischief.
3. Frequent failure of the patient to convey an adequate or entirely plausible reason for the visit. If pinned down by the detective where-do-you-hurt interrogation, he may dwell on some minor ache or pain as a face-saving device, or may actually invent a pain and then himself believe that it exists. Or he may be preoccupied with his own thoughts or sensory misinterpretations.
4. Suggestions of reference or influence—the patient is being forced against his will to do or think certain things. He may be suspicious, and concerned over dictaphones or harmful "rays" from an air-conditioning unit.
5. Behavior out of context of the situation—laughter while discussing the cause of the father's death, or tears while discussing dietary habits, or odd posturing, grimacing or repeated mannerisms.
6. Resistance—as one patient said to his mother, "You can make me go to the doctor, but I won't tell him anything." (He can't have any of my precious thoughts.)
7. Excessive concern over abstract problems, social, religious or philosophical issues, or exaggeration of self esteem.
8. Difficulties in emancipation from a parent—a mother bringing in a son 24 years of age is a frequent clue.

Certain depressive signs are easily seen:

1. A depressed, "sour-puss" demeanor. The patient may try to be pleasant and gay, only to burst into tears unexpectedly.
2. Restless agitation—wringing the hands or repeated stroking of the body, or demanding that the accompanying relative "take me home."
3. An endless "organ recital" of complaints—especially those centering around the narcissistic areas, the head and the pelvis.
4. Blocking, reluctance to talk about, or excessive emotional responses to thoughts of certain events—such as the woman who, two years after the death of the husband, continues to talk of nothing else and cries whenever she talks of it.
5. Ideas of sin, of guilt, of punishment or of influence by supernatural evil personages. Often the patient in a depression searches his past life and tries to assign a causative role to any previous indiscretion or defection, real or fancied.
6. Somatic symptoms, often simulating carcinoma.
7. Reference to self destruction. The truly depressed person may be quite sincere and serious, and his warning may be an appeal for help.

SUMMARY

In our culture, the psychotic patient in the incipient and early stages first seeks help, voluntarily or by coercion, from the family physician or the internist. Dissection of the case into the presenting physical complaints often leads the doctor to a series of misplays: repeated examinations, will-o'-the-wisp excursions through the x-ray department and the laboratory, running tours through the pharmacopeia or attack on various inoffensive organs with a scalpel. Evaluation of the total symptom constellation in terms of the patient's personality often permits an early psychologic diagnosis in the stage where treatment is most efficacious.

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ABSTRACT OF DISCUSSION

DR. HERBERT F. ROBB, Belleville, Mich.: Specialization often creates problems much like a jigsaw puzzle, in which it is not always easy to fit the parts in their proper position to complete the picture. The patient's reaction to his environment shows a decided variation, depending on whether he is physically and mentally fit, and this varies to a degree with the adequacy of the diet. Vitamin B_1 is essential for the complete combustion of carbohydrates. In cases of vitamin B_1 deficiencies, combustion is arrested at the stage of pyruvic acid, which is not efficiently utilized by the brain, the nervous system or the heart. The person is often easily fatigued, irritable and sensitive; he objects to suggestions or criticisms and does not think or associate ideas clearly. If a child develops from 10 to 18 years of age with a continuous or intermittent thiamine hydrochloride deficiency, and is unable to take suggestions or to adjust himself properly to an ever changing environment, there too often develops a personality with an adult body, but a child's understanding of social and economic problems. Many cases of adolescent delinquency and adult confusion could have been prevented or frequently relieved by a few injections of thiamine hydrochloride, if given before the development of long-established attitudes, conditioned reflexes and structural changes. Thiamine hydrochloride therapy, of course, is of value only in cases of deficiencies and cannot compensate for the long-continued, devastating influences of an irrational and emotional environment. In our machine age there is greater mental conflict (with normal biologic and reproductive expression opposed by mental, economic and moral restraints) than existed or does exist in an agricultural environment. Leisure time and unemployment of youth as a result of the use of machines and mass production have created a problem which our educational institutions assume to solve by occupying youth with competitive sports and recreation. We have failed to prevent an increase in psychoses and economic social and political problems because in an age of specialization we fail to adjust the individual and society to the new physical, economic, social, moral and political problems of living in our rapidly changing world.

Dr. Louis G. Moench, Salt Lake City: In the last ten years word has gone out from the teaching centers that neuroses are the concern of all physicians. We are trying now to add that the psychoses are also the concern of all physicians. Just as the surgeon likes to treat the patient with appendicitis before peritonitis sets in, just as the internist likes to treat the patient with a failing heart before the stage of decompensation sets in, the psychiatrist likes to treat the psychotic patient before he is climbing up and down the walls. Yet, the psychiatrist is in an odd position. He seldom sees the patient in the early stages; hence, he often has to resort to the drastic therapies of insulin or electric shock or lobotomy, which are probably the most primitive of all medical treatments in this day and age. It is hoped that eventually the physician can dispense with such forms of treatment if he can treat these patients in the early stages.

HEALED SUBACUTE BACTERIAL ENDOCARDITIS, A NEW ENTITY

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Subacute bacterial endocarditis has been, until recently, an almost uniformly fatal disease. Statistics relative to the mortality in the prepenicillin era have varied from practically 100 per cent as quoted by most observers [1] to 97 per cent noted by Libman.[2] Because of this poor prognosis, the major effort in the past has been directed toward obtaining more effective forms of therapy for the eradication of the infection. Until recently relatively little attention could be devoted to the long-term influence of the infectious process on the myocardium, valvular apparatus and previous cardiovascular abnormalities, because so few patients survived the active phase of the disease. With the advent of more successful therapy, a cure of the active infection has been achieved in a significant number of cases, and greater therapeutic success can be anticipated as the methods improve. Unfortunately, in the entity of healed subacute bacterial endocarditis increasing examples of a new complication are appearing. These patients represent a previously unanticipated course of events: with adequate therapy complete arrest of the infection has resulted, but damage sustained by the heart before the disease was brought under control has contributed to the deterioration of the patient through the development of congestive heart failure. What is the nature of the permanent cardiac damage, the residuum of the controlled infection? Pertinent systematic follow-up studies of these cases are now becoming possible, and recently several isolated reports have appeared relative to this question.

This report concerns the subsequent course of a group of 18 patients whose subacute bacterial endocarditis was treated and whose active infection was cured at the Michael Reese Hospital during the years 1944-1947. The minimum follow-up period is twenty-five months, the maximum sixty-one months. Fifteen of these patients have been previously reported in discussions of the treatment of subacute bacterial endocarditis with penicillin [3] and 3 have been subsequently added. Conclusive clinical evidence and at least two positive blood cultures in our own laboratory were obtained in every case before treatment was begun. In 12 instances the infection was engrafted on rheumatic heart disease and in the remaining 6 on a congenital lesion. The duration of illness prior to treatment varied from three to forty-two weeks. The causative organism in all but 1 case was Streptococcus viridans, the exception being a beta-hemolytic Streptococcus. Treatment was based on the in vitro sensitivity of the causative organism and especially on the clinical results. The total dosage of penicillin varied from 3.6 to 151 million units, and the total hospital stay from eighteen to one hundred and forty-five days.

Follow-up studies were made after discharge of the patients from the hospital at intervals of six months. An interim history, physical examination, fluoroscopic study and roentgenograms of the chest, blood culture and electrocardiogram were obtained at almost every visit. There was no instance of recurrence of the disease.

ANALYSIS OF CASES

On the basis of our follow-up study the series is divisible into two groups.

Group 1.—*Progressive Heart Disease*

This group consists of those patients whose subsequent progress, it is felt, was affected by the course of the subacute bacterial endocarditis. Roentgenographic, electrocardiographic and clinical evidence of progressive heart disease was revealed in all 6 patients who fell into this category. These have been further subdivided as (*a*) dead and (*b*) living.

(*a*) Dead: Three patients have died in congestive heart failure eight, nine and thirty-nine months, respectively, after the cure of their infection. In none of these was there evidence of cardiac failure before the onset of the endocarditis. The single common factor is a dynamically severe aortic regurgitation, viz: a regurgitation causing not only a diastolic aortic murmur but also a wide pulse pressure, Corrigan's pulse (water-hammer pulse), pistol-shot femoral pulses and definite evidence of strain on the heart.

(*b*) Living: The 3 patients in this group have exhibited definite evidence of progressive heart disease

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Aided by the Herbert G. Mayer Memorial Fund.

Sam Ehrlich Memorial Fellow (Dr. Rosenman).

This article has been abbreviated in The Journal by omission of the tabular data, which will appear in author's reprints only.

Acknowledgement is made of assistance by various members of the department in the follow-up observations, and by the physicians who have cared for these patients.

From the Cardiovascular Department (supported in part by the Michael Reese Research Foundation), the Medical Research Institute and the Department of Medicine, Michael Reese Hospital.

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since discharge from the hospital, although congestive heart failure had not been previously discernible. Two of these patients (cases 5 and 6) display the same severe aortic insufficiency that was present in the patients who died of heart failure. The third (case 4) shows a combination of a patent ductus arteriosus and diastolic aortic murmur dynamically akin to the conditions observed in the preceding patients. A decidedly increased pulse pressure is present in this last patient and cardiac catheterization studies have demonstrated the ductus to be one of large size. The net result is a heavy increase in the load of the left ventricle.

Thus, of the 18 patients, 6 have shown definite alteration of their clinical course attributable to the after-effects of subacute bacterial endocarditis. In 3 the effect has been severe enough to lead to death from congestive heart failure. The single important lesion present in all 6 of these cases is a dynamically significant aortic regurgitation. In 5 instances the underlying lesion was that of acquired heart disease.

Group 2.—*Without Aggravation of Cardiac Status*

This group includes 12 patients in whom subacute bacterial endocarditis apparently appeared as an ordinary intercurrent infection. There is no evidence that the healing of the infection has aggravated the preexisting cardiac disease. In 3 instances an aortic regurgitation murmur is present but without other observations to indicate that it has important dynamic significance. In 7 of the 12 cases the underlying lesion is rheumatic heart disease. There are 4 instances of interventricular septal defect and 1 classified as miscellaneous.

Thus 12 of the 18 patients have revealed no significant change in their cardiac status in spite of the existence of healed subacute bacterial endocarditis. In none of these is there a dynamically significant aortic incompetence, although acoustic [4] aortic regurgitation is present in 3 patients.

COMMENT

It is a common experience in clinical medicine that with the addition of new weapons to the armamentarium, concomitant new obstacles may appear. As early as 1945 reports were appearing of deaths due to congestive heart failure in patients who had been treated and cured of the active infection in subacute bacterial endocarditis. Rosenblatt and Loewe [5] cited 2 cases, Bloomfield and Halpern [6] another and Flippin and his group [7] an additional 3. In subsequent years other reports appeared by Honigman and Karns,[8] Dawson and Hunter,[9] Glaser and co-workers,[10] Jones and his colleagues,[11] Solomon and Grayzel,[12] Herring and Davis [13] and Christie.[14] In reviewing these reports one is distressed to note that in too many instances the cardiac status prior to the endocarditis was relatively good and, barring the infection, unlikely to lead to so early a death of the patient.

With longer periods of observation, there have been attempts to correlate other factors in the illness with progressive cardiac disability after cure of the active endocarditis. Thus Rapoport and Ellis [15] were unable to find any correlation in their series between the development of cardiac failure and either the duration of illness or the age of the patient. Jones and his group [11] have indicated that the longer the duration of illness the more pronounced is the cardiac enlargement and the renal involvement, and the more frequent is heart failure and uremia. They could find no correlation between the severity of the cardiac damage before the infection and the mortality or between age and mortality in the younger age groups, although all patients over 50 in their series died. Fiese [16] reviewed 25 cases of penicillin-treated subacute bacterial endocarditis which had been followed for three to twenty-five months. Although cardiac efficacy after treatment seemed to be determined mostly by heart size and reserve at the time treatment was begun, no one of the following factors—the patient's age, the type of heart disease, the clinical appearance and the height of the temperature—could be correlated with the subsequent course. In a review of 269 cases of penicillin-treated subacute bacterial endocarditis Christie [14] recently found no correlation between prognosis and age, whereas the existence of heart failure before treatment was of extreme importance. Although he stated that the primary cardiac lesion appeared to be of little significance, the highest death rates were found in those patients with aortic valve defects, whether congenital or acquired.

Our study, too, has revealed no correlation between progressive heart disease following cure of the endocarditis and age, sex, duration of illness prior to treatment, length of hospital stay or total penicillin dosage. Rather, it has become apparent to us that the presence of a dynamically significant aortic insufficiency is the common factor in our patients with progressive cardiac disease. This is reminiscent of the progressive nature of syphilitic aortic regurgitation. Contrariwise, in not a single case in which there was no progression of the previous cardiac status was dynamic aortic insufficiency present, although it was noted acoustically in 3 cases. It is interesting that, of Jones's [11] 29 patients with underlying rheumatic heart disease 16 had aortic incompetence, 10 with development of congestive heart failure. In 2 others aortic insufficiency subsequently developed and congestive failure followed. In striking contrast is the fact that cardiac insufficiency was noted in only 2 of 11 patients without aortic regurgitation. Furthermore, both of the deaths reported by Glaser [10] were in patients who had aortic incompetence, and of the 2 additional (living) patients with congestive heart failure 1 had aortic insufficiency. The 1 death cited by Dawson and Hunter [9] was due to congestive heart failure with aortic regurgitation. The same was true of the cases of Rosenblatt and Loewe,[5] Honigman and Karns,[8] Herring and Davis[13] and Solomon and Grayzel.[12] The single death in heart failure associated with mitral stenosis, reported by Bloomfield and associates,[17] stands out in sharp contrast. This aortic insufficiency of subacute bacterial endocarditis is physiologically identical with that of the progressive varieties of uncomplicated rheumatic or syphilitic aortic regurgitation. With each increment of progression of the lesion a disproportionately greater stress is placed on the left ventricle. Finally, when congestive failure intervenes it is almost totally irreversible.

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[4] Acoustic aortic regurgitation is that type in which the diastolic murmur is unaccompanied by other important observations noted in dynamic aortic insufficiency: namely, wide pulse pressure, water-hammer pulse, pistol-shot femoral pulses and changes in the left ventricle due to the increased strain.

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[16] Fiese, M. J.: Cardiac Failure in Penicillin-Treated Subacute Bacterial Endocarditis, Arch. Int. Med. **79:** 436 (April) 1947.

Thus the compilation of previous experiences, coupled with our own, adds an important prognostic tool to the changing approach to subacute bacterial endocarditis. The presence of a dynamically significant aortic insufficiency, following cure of the infection, definitely curtails the predictable life span. Furthermore, it is important to recognize and treat this disease early, in order to abort as soon as possible the action of both the extremely destructive and the smoldering type of organism, notwithstanding the fact that statistically the duration of illness correlates poorly with the ultimate course of the disease. Besides progressive aortic regurgitation, acute rheumatic fever can recur in patients with healed subacute bacterial endocarditis; and in the elderly patients progressive coronary disease can add to previous cardiac damage.

Of basic importance is the question whether penicillin plays any part in the development of progressive heart disease. In the prepenicillin era unmistakable evidence of healing was seen in all but the most acute cases side by side with more or less active or inactive infection. So accustomed was the pathologist to seeing this strong tendency toward healing that he was led to remark, "If only the patient had lived a little longer he would have recovered."[1] Pathologic observations similar to those in recent cases were noted in the spontaneously cured patients reported by Libman.[2b] Furthermore, tabulation of the incidence of congestive heart failure in the prepenicillin era by Fiese[16] and by Buchbinder and Saphir[18] was approximately 80 per cent. These figures were determined on terminal or moribund patients. In contrast to this is the incidence of congestive heart failure in only 30 per cent of penicillin-treated patients in Fiese's series,[16] 40 per cent in Christie's[14] analysis and 16.5 per cent in ours. Thus, it seems that penicillin not only serves the function of tiding the patient over his illness through additional bacteriostatic and bactericidal action but actually, by checking the thromboembolic "showers," is a factor in reducing the incidence of cardiac insufficiency. Apparently it is only when the progressive increase in aortic regurgitation occurs as part of healing that it dynamically upsets the usual trend.

Finally a brief reference must be made to the myocardial and endocardial pathologic processes in subacute bacterial endocarditis. From a number of excellent reviews it can be concluded that both the initial lesion and the healing process are identical in the treated and untreated patients. Differences lie only in the stages of healing. Healing is more advanced in those patients receiving penicillin and retarded in those patients unexposed to it. This has been aptly stated by Hildebrand and Priest[19]: "In patients treated with penicillin, the lesions of subacute bacterial endocarditis revealed marked evidence of healing. . . . The healing process itself is the same as that presented in standard textbooks of pathology except that the process is more advanced in patients treated with penicillin, and acute inflammatory reaction is much more marked than is described in the medical literature to date." It is in this healing that the detrimental hazard lurks.

SUMMARY

1. Eighteen cases of penicillin-treated and cured subacute bacterial endocarditis have been followed for twenty-five to sixty-one months following discharge of the patient from the hospital.

2. Six patients (one third) have shown progressive cardiac disability since the onset of the endocarditis. In 3 the disability was so severe as to lead to death from congestive heart failure eight, nine and thirty-nine months, respectively, after cure of the infection. The single common factor in all 6 of these patients is dynamically significant insufficiency of the aortic valve, which led to strain of the heart.

3. Twelve patients have shown no progression of their cardiac status in spite of the existence of healed subacute bacterial endocarditis. In none of these is there dynamic aortic insufficiency, although acoustically it was noted in 3 instances.

4. No correlation can be found between progressive cardiac disability following cure of the infection and age, sex, duration of illness prior to treatment, length of hospital stay or total penicillin dosage.

5. The significance of penicillin in the development of progressive heart disease is discussed.

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[17] Bloomfield, A. L.; Armstrong, D. C., and Kirby, W. M.: The Treatment of Subacute Bacterial Endocarditis with Penicillin, J. Clin. Investigation **24**: 251, 1945.

[18] Buchbinder, W. C., and Saphir, O.: Heart Failure in Subacute Bacterial Endocarditis, Arch. Int. Med. **64**: 337 (Aug.) 1939.

[19] Hildebrand, E., and Priest, W. S.: Cardiac Lesions in Subacute Bacterial Endocarditis Treated with Penicillin, Am. J. Clin. Path. **17**: 345, 1947.

Authors-Doctors.—There are many instances of distinguished authors being doctors, men drawing upon their knowledge of the frailties of human nature to illumine the theme of their books. One of the best examples is Tobias Smollett, an irascible Scotch doctor, who discovered Nice and the Riviera for us and the French. Then, we have Sir Thomas Browne (1605-1682), the beloved physician, who despite the civil war raging around him sat placidly writing the RELIGIO MEDICI. If you want confirmation of his genius and charm of style, take up and read the concluding chapters of URN BURIAL. Tchekow, the Russian, is another doctor who had enormous influence on his generation, his greatest masterpieces perhaps being THE DUEL, WARD NO. 6 and THE BISHOP. It is hardly necessary to recall to you Conan Doyle of Sherlock Holmes fame; Somerset Maugham, that master of drama and the short story; Brett Young and Warwick Deeping. . . . These are names known to all, but I wonder how many realize that Clemenceau, The Tiger, and President of the French Republic, was a practising physician throughout his long life, nor must we forget that Robert Bridges, the Poet Laureate, was a cultured physician, many of whose poems show the soul and instinct of an artist alive to human suffering. Sir Charles Wyndham, perhaps one of the most beloved men of our stage, was a surgeon in the American Civil War and often gave to his audience the benefits of his medical knowledge.—V. B. Green-Armytage, M.D., The Debt of the Fine Arts to Medicine, *Cambridge University Medical Society Magazine,* Easter term, 1949, Reprinted from "The Embryo," Summer, 1947.

RENAL FAILURE ASSOCIATED WITH LOW EXTRACELLULAR SODIUM CHLORIDE

The Low Salt Syndrome

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In an earlier report [1] attention was called to a condition seen in 2 patients with congestive circulatory failure [2] and diminished renal function. When the intake of fluids was rapidly increased, urinary volume did not increase proportionately and dilution of electrolytes in extracellular fluids occurred. Besides gain in weight there was oliguria and retention of nitrogen in the blood; patients complained of weakness, drowsiness and muscular cramps and became prostrated. It was believed that this sequence of events represented "water intoxication" resulting from a high intake of water and a low intake of salt.

Further experience with this condition has since accumulated. It developed in over one third of a series of 40 cardiac patients being studied. It was precipitated not only by excessive intake of fluids but more commonly by the overenthusiastic use of mercurial diuretics in conjunction with diets low in sodium chloride. It has developed spontaneously when arterial hypertension was treated by salt restriction.

The use of dextrose solutions for postoperative care, without adequate replacement of losses of electrolytes, has sometimes resulted in similar states of renal insufficiency. When large amounts of sodium chloride were lost from the body by other routes (as, for example, by biliary fistulas), oliguria or anuria often developed. In fact, any situation which caused a low concentration of sodium and chloride in extracellular fluids, regardless of the total amount of such fluids, appeared to predispose already disturbed kidneys to a depression of renal function, with consequent oliguria and retention of nitrogen in blood. The presence of shock was not a necessary component of this condition, nor was a state of acidosis or alkalosis, carbon dioxide–combining power of the plasma being usually within the normal range. With the wide employment of low salt diets in congestive failure and hypertension and with the often excessive use of dextrose in water for postoperative care, renal insufficiency from this cause may be more frequently observed. As it usually is unrecognized unless looked for specifically, and as adequate replacement therapy will often alter an otherwise fatal outcome, the present report will describe 21 cases of the condition and methods for its treatment. The term "low salt syndrome" is suggested.

SIGNS AND SYMPTOMS

The development of the low salt syndrome was recognized by (1) a successive depression of urinary volume occurring during three to five days; (2) a depression of urinary chlorides to negligible quantities (which did not increase after injection of mercurial diuretics); (3) a rapid progressive gain in body weight; (4) an elevation of the nonprotein nitrogen content of the blood; (5) a fall in the plasma levels of chloride and sodium,[3] and (6) occasionally an elevation of the cardiac rate.

Symptoms of which patients complained were (1) drowsiness, weakness and lethargy (often wrongly attributed to sedatives), (2) loss of appetite sometimes with thirst, (3) nausea and occasional vomiting, (4) occasionally abdominal or muscular cramps and (5) the secondary symptoms of an increase in extracellular fluids when edema was already present.

In every case observed so far there was evidence either of some degree of organic renal disease, usually without renal insufficiency, or of a functional renal disturbance such as that associated with congestive failure. In chronic glomerulonephritis with moderate renal insufficiency a similar situation often developed. Although spontaneous recovery sometimes occurred, partial renal shutdown usually persisted until death. Reversal of the process as soon as it was detected was considered important; permanent functional changes probably occurred as the condition became established, against which treatment was often useless.

TREATMENT

Therapy was aimed at rapid restoration of the concentration of sodium and chloride in extracellular fluids to relatively normal levels by intravenous injection of hypertonic solution of sodium chloride (5 or 6 per cent). The rationale was as follows:

1. The whole extracellular fluid mass contained an amount of sodium chloride insufficient to maintain normal osmotic equilibrium. Probably intracellular fluids were increased. The net result was overhydration.

2. The most rapid method of restoring the concentrations of sodium and chloride to normal was to administer salt without water. Any water given would decrease the increment between the concentration of salt introduced into the body and the concentration present in extracellular fluids. For example, if body fluids contain a concentration of 75 milliequivalents per liter of chlorides and 120 milliequivalents of sodium, and a value of 100 and 145 respectively are desired, it is obvious that the replacement of the lacking 25 milliequivalents per liter of sodium chloride will not readily be accomplished by the administration of isotonic (physiologic) sodium chloride solution (145 milliequivalents per liter). So much water would be necessary that extracellular fluids would be decidedly increased. Even 1 liter of isotonic sodium chloride solution per liter of extracellular fluids would increase the concentration of sodium chloride in blood and tissue fluids by only 12.5 milliequivalents; 2 liters of saline solution per liter of extracellular fluids would be necessary to restore the deficit. This amount is obviously impossible to give to any subject whose kidneys are not excreting water. Therefore, the more concentrated the saline solution the more readily will the deficiency be made up. By experiment it was found that intravenous administration of 5 or 6 per cent sodium chloride solution could be tolerated if given slowly, the venous pressure rising only slightly, if at all.

3. Although salt can be given by mouth, the amount usually necessary to restore electrolyte equilibrium may be large (20 to 40 Gm.), can produce gastrointestinal disturbances and may have an erratic rate of absorption. The intravenous route is therefore preferable, although additional amounts may be administered in food or capsules.

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Read before the Section on Internal Medicine at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

This investigation was supported in part by a research grant from the Division of Research Grants and Fellowships of the National Institutes of Health, United States Public Health Service.

Cases 1 to 8, 11 to 13, 15 and 16 were observed at the Hospital of the Rockefeller Institute for Medical Research, New York. Case 21 was referred by Dr. Gene B. Starkloff. The remainder of the cases were seen on the wards of Barnes Hospital, case 20 from the clinical material of Dr. Edward Massie.

[1] Schroeder, H. A.: Studies on Congestive Heart Failure: I. The Importance of Restriction of Salt as Compared to Water, Am. Heart J. **22**: 141, 1941.

[2] The term "congestive circulatory failure" is preferred to "congestive heart failure," as the sequence of events leading to "cardiac" edema may be initiated by noncardiac as well as cardiac factors.

[3] Any renal or urologic condition causing oliguria or anuria will result in the electrolyte pattern here described unless all the fluids given are balanced by isosmolar sodium and chloride. It is probable, however, that in these conditions the remaining renal function is further depressed by excessive water.

4. Serious consequences resulting from the slow intravenous injection of hypertonic saline solution into a patient already exhibiting a high venous pressure and overhydration are theoretically not to be expected. Injected sodium chloride leaves the blood fairly rapidly, diffusing into extravascular fluids, and probably contributes little to an increase in blood volume except momentarily and until equilibrium between blood and tissue fluids is established.

5. It was found by experiment that diuresis could be initiated when the lacking concentration of salt was restored, cardiac function occasionally improving.

The amount given depended on a calculation of the deficit in plasma, in estimated interstitial fluids and in accumulated edema. Since the kidneys of cardiac patients are deranged but can put out water more readily than salt, reestablishment of their normal balance of sodium chloride was made slowly so as not to "overshoot." Normal extracellular fluid volume was considered as 20 per cent of the body weight. Edema fluid, if present, was roughly estimated from the gain in body weight. Plasma levels of chloride and carbon dioxide-combining power were followed daily; subsequent injections of salt were based on their values. Usually when the plasma level of chloride reached 90 to 95 milliequivalents per liter diuresis was well established. As a rough approximation, for a 70 Kg. man, 17.1 milliequivalents of sodium chloride (1 Gm.) should be expected to elevate plasma levels 1 milliequivalent per liter if edema is not present and salt is not excreted.

TABLE 1.—*Terminal Renal Insufficiency Associated with Overhydration or Electrolyte Loss*

Case	Date	Sex	Age, Yr.	Diagnosis*	Uncontrolled Arrythmia Present †	Duration of Oliguria, Days	Lowest Urinary Volume, Cc.	Lowest Urinary Chlorides as NaCl, Gm.	Chlorides in Plasma, mEq./L.	CO₂, mEq./L.	Response ‡ of Urinary Volume and Cl to Hg.	Av. Daily Fluids Retained (Intake-Output), Cc.	Total Gain in Body Weight, Kg.	Net Loss § of Cl as NaCl in Urine Prior to Oliguria, mEq.	Previous Number of Injections of Hg. and Total Dose, Cc.		Other Contributing Factors and Remarks
1 P. F.	3/29/41	♂	33	R.H.D.	R	5	468	0	76.4 Na 124.5	27.8	0	1,420	1.6	115	2	4	Arrythmia severe Adrenal cortical extract caused diuresis
2 W. D.	9/26/41	♂	42	R.H.D.	S	3	141	0	76.6 Na 111.1	24.5	0	2,120	1.8	...	2	6	Adrenal cortical extract caused diuresis *Fluids increased 1,500 to 3,400 cc. per day*
3 E. C	12/30/40	♀	51	R.H.D.	R	6	0	0	76.6‖	....	0	863	2.7	314	4	16	
4 J. K.	12/ 3/39	♀	30	R.H.D.	R	8	79	0	....	....	0	831	3.4	403	3	8	
5 H. M.	9/20/38	♀	45	R.H.D.	R	5	103	0	77.9	....	..	960	1.6	0	0		Fluids increased 1,500 to 3,000 cc. per day
6 O. C.	10/11/39	♂	89	R.H.D.	R	5	65	0	....	....	..	1,280	0	331	2	6	
7 J. S.	10/ 7/39	♂	73	A.H.D.	R	9	48	0	....	....	..	1,122	2.6	190	0		Intravenous 5 per cent dextrose 1,500 cc.
8 H. P.	5/ 5/39	♂	47	R.H.D.	R	2	280	0	....	....	..	1,075	1.5	354	3	7	
9 S. K.	12/10/46	♀	54	H.H.D.	O	5	25	..	69.0 Na 118.4	24.1	..	2,057	2.0	...	0		On rice diet
10 M. J.	11/ 9/48	♂	56	Ca. Biliary fistula	O	5	0	..	87 Na 128	26.4	..	1,330	...	376¶	0		NaCl loss from bile drainage of 1,000 to 2,000 cc. per day

* R.H.D., H.H.D. and A.H.D. denote rheumatic, hypertensive and arteriosclerotic heart disease, respectively.
† Uncontrolled arrythmia indicates that a pulse deficit was present. The arrythmia was always caused by ectopic ventricular beats. R denotes that the apical rate was 90 per minute or more, S that the apical rate was below 90 per minute.
‡ The response of the urinary output of water and chlorides to the intravenous injection of a mercurial diuretic.
§ The total output of urinary chlorides for seven to ten days before the onset of oliguria minus the dietary intake of salt.
‖ Edema fluid.
¶ Estimated.

SUMMARY OF CASES

Of the 21 patients encountered with the low salt syndrome, 10 died and 11 recovered. Most of the former were discovered in retrospect (table 1), and plasma electrolyte values had not been closely followed. Chloride levels were determined in only 4 of the 8 who died of cardiac insufficiency. However, it is probable that the terminal event was renal failure, judging from the rise in nonprotein nitrogen which they all demonstrated, the low urinary volume and the large retention of fluids manifested by the discrepancy between the intake and the output. In 1 instance (case 9) reported elsewhere,[4] the syndrome developed spontaneously while the patient was on the low sodium intake of the rice diet of Kempner[5] with fatal outcome.

In 1 patient (case 3) whose massive edema was being removed by Southey tubes and treated by mercurial diuretics, there was a progressive fall in the chloride content of the fluid from normal levels to 76.6 milliequivalents per liter, as oliguria led to anuria. In the others low plasma chloride levels were discovered after oliguria had occurred.

The development of the "low salt syndrome" is illustrated by the following case.

A woman aged 30 weighed 50 Kg. and was afflicted with subacute and chronic rheumatic endocarditis with involvement of the mitral and tricuspid valves (case 4). Her extracellular accumulation of edema fluid was estimated at about 8 Kg. Her electrocardiogram showed many ectopic beats from various ventricular foci. Her weight varied little during a control period of three weeks. The intravenous injection of 2 cc. of mersalyl and theophylline solution (salyrgan®) caused a urinary excretion of 17 Gm. of chloride calculated as sodium chloride. Three days later the same dose resulted in the excretion of 6.1 Gm. and was followed by progressive diminution of urinary volume, ending finally in oliguria. A later injection of 4 cc. of mersalyl and theophylline solution did not affect urinary water or chlorides. As the patient was ingesting only 1 Gm. of salt per day, the excretion of 23.1 Gm. of salt (395 milliequivalents) accompanied by only 2.2 Kg. of water apparently

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4. Schroeder, H. A.; Goldman, M. L., and Futcher, P. H.: The Effects of the Rice Diet upon the Blood Pressure of Hypertensive Individuals, Ann. Int. Med. 30:713, 1949.

5. Kempner, W.: Compensation of Renal Metabolic Dysfunction: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, North Carolina M. J. 1: [illegible]

depleted her extracellular electrolytes. A week later she had retained 3.4 Kg. of water, which further hydrated and diluted her electrolytes. She died of renal and cardiac insufficiency.

A similar situation resulted apparently from the daily intramuscular injection for twenty days of 2 cc. of meralluride sodium solution (mercuhydrin®).

A man aged 69 with long-standing chronic congestive circulatory failure received daily intramuscular injections of 2 cc. meralluride sodium solution for twenty days (case 14). Except after the first two doses, there was no diuresis; his urinary volume varied usually from 300 to 800 cc. per day but occasionally was as low as 180 cc. He became weak and nauseated, with occasional vomiting; later, considerable drowsiness developed and he complained of cramps in his forearm, calves and thighs. His plasma chlorides were found to be 81 milliequivalents and his carbon dioxide–combining power 32.5 milliequivalents per liter, and there was retention of nitrogen in his blood. He was given 26 Gm. of sodium chloride in 5 per cent solution in two doses without elevating his venous pressure of 260 mm. of saline solution significantly. His plasma chlorides rose to 91 milliequivalents and his carbon dioxide–combining power fell to 27.5 milliequivalents per liter. Moderate diuresis was initiated, after which the nonprotein nitrogen in his blood became lower.

TABLE 2.—*Renal Insufficiency with Recovery*

Case	Date	Sex	Age, Yr.	Diagnosis*	Uncontrolled Arrythmia Present †	Duration of Oliguria, Days	Lowest Urinary Volume, Cc.	Lowest Urinary Chlorides as NaCl, Gm.	N. P. N.	Chlorides in Plasma, mEq./L.	CO₂, mEq./L.	Av. Daily Fluids Retained (Intake-Output), Cc.	Total Gain in Body Weight, Kg.	Amount NaCl Given I.V., Gm.	Other Treatment	Result, Weight Loss, Kg.	Initiating Factors
11 N. J.	4/ 4/40	♂	67	A.H.D.	R	5	283	0	....	....	....	1,025	2.9	16.0	....	1.0	Hg. 5 cc. + therapy
12 B. H.	3/12/39	♂	65	A.H.D.	O	5	370	0	....	78.6							
	3/17/39				O	4	639	0	61.0	73.5	....	1,250	2.5	....		0	Hg. 15 cc.
											....	744	3.5	....	Paracent. Fluid intake lowered	3.6	Fluid intake increased 1,000 to 3,000 cc. per day
	5/ 5/39				O	6	521	0	70.4	80.2	....	593	1.6	6.0		+1.7	Spontaneous
13 J. V.	12/17/40	♀	62	A.H.D.	O	7	30	0	88.6‡	81.6	17.9	1,103	5.3	39.0	Fluid intake lowered	3.9	Hg. 10 cc. + fluid intake increased
14 F. T.	2/22/47	♂	69	A.H.D.	O	8	130	..	56.0	81.0	32.5	859	2.9	26.0	....	1.5	Hg. 40 cc.; died similar episode
15 A. S.	10/15/38	♂	43	R.H.D.	O	6	460	0	....	....	....	1,443	3.3	....	Fluid intake lowered	0	Hg. 6 cc.; fluid intake increased to 3,000 cc. per day; died similar episode
8 H. P.	4/19/39	♂	47	R.H.D.	R	3	210	0	....	....	....	1,117	2.0	....	Spontaneous recovery	...	Hg. 7 cc.; died similar episode
16 J. P.	9/ 9/39	♂	37	R.H.D.	R	4	450	0	....	....	....	450	1.1	....	Spontaneous recovery	0.4	Hg. 4 cc.
17 A. P.	8/10/48	♂	44	H.H.D.	O	7	0	..	42.0	76.0	35.3	1,756	2.0	63.0	....	0.9	0.5 Gm. salt diet; no congestive failure
18 B. H.	12/20/48	♀	41	A.H.D.	O	8	200	..	42.0	79.0 Na 116.0	29.5	1,168	2.3	25.0	Blood	..	Hg. 4 cc.; died similar episode later
19 H. B.	10/19/48	♂	30	Chronic glom. nephritis	O	6	200	..	105.0	89.0 Na 123.9	18.2	1,570	4.6	49.0	....	10.2	Died uremia 3 mo. later
20 B. K.	8/ 6/48	♂	58	H.H.D.	O	5+	300	..	38.0	64.0	54.5	930	...	30.0	Various	...	Hg. 10 cc.; complete recovery—loss of 18 Kg.
21 H. P.	1/19/49	♀	78	Intestinal obstruction	O	4	100	..	64.0‡	75.0	....	2,300	...	21.5	None	...	Excessive injection dextrose in water, loss of 300– mEq. Cl by gastric suction; recovery rapid

* A.H.D., R.H.D. and H.H.D. signify arteriosclerotic, rheumatic and hypertensive heart disease, respectively.
† Uncontrolled arrythmia indicates that a pulse deficit was present. The arrythmia was always caused by ectopic ventricular beats; R denotes that the apical rate was 90 per minute or more.
‡ Blood urea nitrogen.

An attempt was made to restore electrolytes to normal by another method in 1 case (chart 1).

A man aged 33 had known rheumatic heart disease involving his mitral valve (case 1). During convalescence from pneumonia, severe right-sided heart failure developed with general anasarca estimated at more than 15 Kg. of fluid. His body weight had declined only 1.5 Kg. in two weeks in spite of two injections of 2 cc. of mercurophylline and the use of a proprietary double salt of calcium theobromine and calcium salicylate. A large discrepancy was noted between his intake of fluids and his urinary volume, although he had lost only 115 milliequivalents of sodium chloride in his urine. It was not surprising, therefore, to find in his plasma a sodium level of 124.5 milliequivalents per liter, a chloride level of 76.4 and carbon dioxide–combining power of 27.8. There was retention of nitrogen in his blood (blood urea nitrogen 27.7 mg. per hundred cubic centimeters). He was given 15 Gm. of sodium chloride intravenously, which initiated a diuresis of water in which chloride values were negligible, caused a loss of 3.5 Kg. in weight and resulted in a moderate elevation of his plasma electrolytes (sodium 129.6, chloride 86.4 milliequivalents per liter). When his weight became relatively stationary adrenal cortical extract (eschatin®) was given daily. No chloride appeared in his urine, but a moderate water diuresis was initiated with a further loss of 4.8 Kg. in weight. His plasma chlorides rose to low normal values (93 milliequivalents per liter) as this occurred, but he died soon after with 144 mg. per hundred cubic centimeters of nonprotein nitrogen in his blood.

Apparently the renal disturbance which he sustained was irreversible, although obvious lesions to account for it were not found at postmortem examination.[6]

In another case, that of a man aged 42 with rheumatic heart disease involving the tricuspid as well as

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[6] No characteristic lesions have been noted in the kidneys of the 12 patients coming to autopsy.

calculated to be ideal began recovery. Excess salt resulted in the accumulation of edema, as is well known.[7]

The injection of hypertonic sodium chloride solution was not accompanied with adverse symptoms when plasma electrolytes were low. Venous pressure was always measured simultaneously; occasionally it fell slightly, more often there was no change, but sometimes it rose 2 to 3 cm. of saline solution after the first 100 cc. had been given, rising no further. The presence of pulmonary congestion did not contraindicate the injection of the hypertonic sodium chloride solution. When the electrolyte concentration in plasma was low, minimum pulmonary edema was observed in 2 cases to regress while sodium chloride solution was being injected. Even large quantities of hypertonic saline solution (6 per cent) sometimes failed to elevate venous pressure significantly above an already high value.[7] Diffusion from blood into tissues was rapid, and higher plasma levels were not always maintained. Plasma chlorides were measured in 2 cases ten to fifteen minutes, ten to twelve hours and twenty-four hours after the injection. An immediate rise of 7.5 milliequivalents per liter, caused by the injection of 5 Gm. of sodium chloride, produced one of only 3.5 milliequivalents twenty-four hours later. Six grams of salt produced a rise of 7.2 milliequivalents in ten minutes, but only a rise of 2.1 the next day. Both patients were edematous. Their urine did not manifest a significant increase in total chloride content, although the concentration of single specimens was increased.

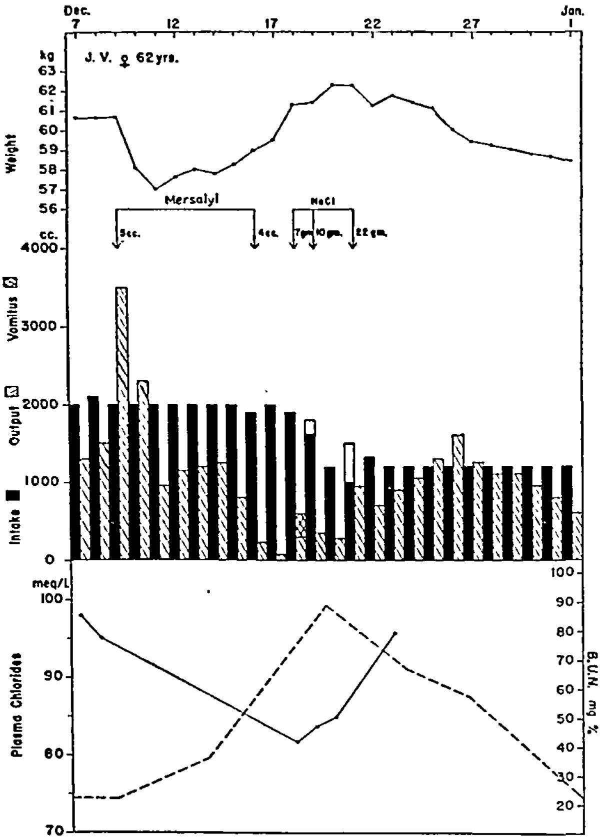

Chart 2 (case 13).—A woman aged 62 displayed chronic congestive failure following the second of two attacks of coronary occlusion. On December 9 the injection of 5 cc. of mersalyl and theophylline resulted in a fall of plasma chlorides. A discrepancy between the intake and output occurred, which was associated with a gain in weight of 5.2 Kg. On December 18 plasma sodium was 124.5 milliequivalents per liter and carbon dioxide-combining power 17.9. On the next day blood urea nitrogen, which had been at normal levels, was 88.3 mg. per hundred cubic centimeters. The injection of 39 Gm. of sodium chloride in 5 per cent solution resulted in diuresis, loss of weight and return of plasma chlorides and blood urea nitrogen to normal levels. Note the lack of response of the urinary volume to mersalyl on December 16. The patient was taking a diet containing 0.5 Gm. of salt daily.

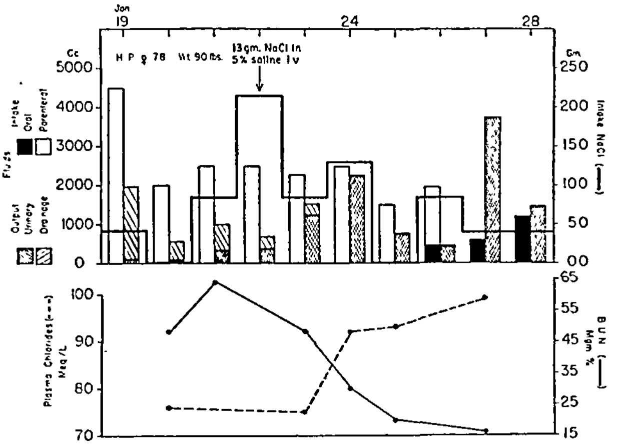

Chart 3 (case 21).—A woman aged 78 had had partial intestinal obstruction, which was corrected surgically. Wangensteen suction drainage from the stomach was instituted postoperatively. There was a large discrepancy between her intake and output of fluids, most of which consisted of 5 per cent dextrose in water injected intravenously. On Jan. 23, 1949 she was comatose and was considered in terminal renal insufficiency. When an attempt was made to correct the electrolyte disturbance by the intravenous injection of 21.5 Gm. of sodium chloride in 5 per cent solution, diuresis became established. Nitrogen retention disappeared, and there was a dramatic improvement in her symptoms with complete recovery.

COMMENT

Peters and Van Slyke[8] have discussed the matter of renal insufficiency resulting from sodium depletion in these words:

> The nonprotein nitrogen of the blood tends to increase in all conditions in which the fluids of the body are greatly depleted, whether the dehydration results from simple deprivation of fluids or from excessive loss of fluid through vomiting or diarrhea. These increases seem to arise chiefly from oliguria, with accelerated protein catabolism and impaired circulation playing contributory roles. A voluminous literature has sprung up about a condition known as "uremia or azotemia from lack of salt," in which it is implied that accumulation of nonprotein nitrogen in the blood is a direct response to depletion of the sodium and chloride of the body. Such a theory finds little physiological support. Deficits of chloride and sodium in the body fluids are generally indications of dehydration. . . . Accumulations of nonprotein nitrogen in the blood in this condition can be eliminated by the administration of enough water to provoke diuresis, although the deficits of chloride and sodium may be aggravated by such therapy. If salt depletion contributes to azotemia at all, it is probably through its injurious effects on bodily functions in general, and especially upon the circulation, not because it has any particularly deleterious influence upon the kidneys. It has been reported[9] that injections of small volumes of concentrated sodium chloride solution are beneficial in restoring the excretory activity of the kidneys; but such salt injections increase the volume of extracellular fluid by abstracting water from the tissue cells, thereby providing more water for the formation of urine.

They have suggested further that the elevation of blood urea is "probably only a manifestation of the circulatory collapse which results from sodium depletion," disagreeing with certain European writers on the subject.[9]

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[7] Futcher, P. H., and Schroeder, H. A.: Studies on Congestive Heart Failure: II. Impaired Renal Excretion of Sodium Chloride, Am. J. M. Sc. **204**: 52, 1942.

[8] Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, ed. 2, Baltimore, Williams & Wilkins Company, 1946, vol. 1, p. 663.

[9] Chabanier, H., and Lobo-Onell, C.: Hypochlorémie et accident post-opératoires, Paris, Masson & Cie, 1934.

other valves (case 2), adrenal cortical extract likewise appeared to initiate diuresis accompanied by a loss of 2.7 Kg. The plasma sodium level, which was initially 111.1 milliequivalents per liter (chloride 77.2), rose only slightly and the patient died. No extra sodium chloride was given, which may have accounted for his failure to recover. A wide discrepancy between the intake and output of fluids was a constant feature of his course.

It would therefore appear that patients depleted of salt may die with low urinary output, retention of water and dilution of electrolytes. During this state nitrogen is retained, weight is gained rapidly and chlorides disappear from the urine. Mercurial diuretics produce little or no response on urinary chlorides or water. Their excessive use may precipitate this condition when the intake of salt is restricted.

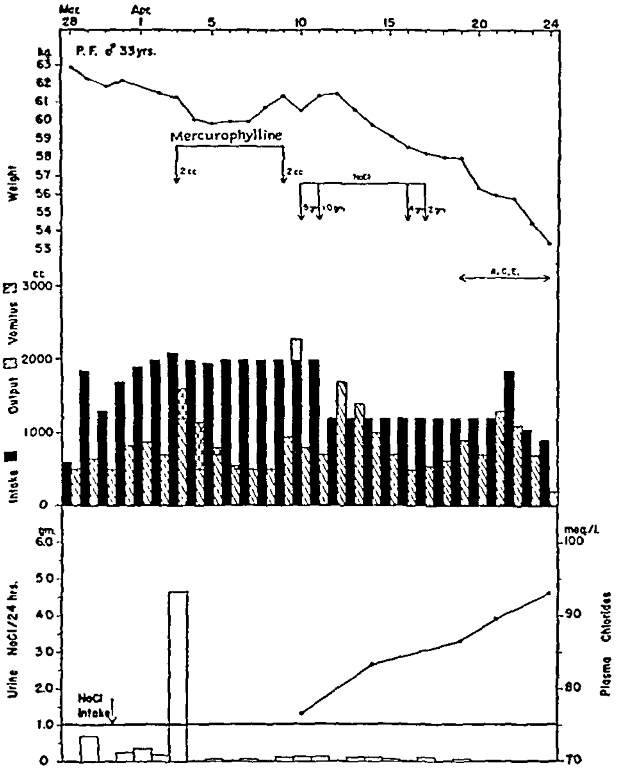

Chart 1 (case 1).—A man aged 33 exhibited congestive failure after an attack of pneumonia. There was considerable discrepancy between his intake and output of fluids, leading to overhydration. In addition he lost 115 milliequivalents of chloride in his urine. On March 10 plasma sodium was 124.5 milliequivalents per liter and carbon dioxide-combining power 27.8. The plasma chloride levels are shown. Blood urea on March 14 was 60.2 mg. per hundred cubic centimeters and his urea-clearance was 30 per cent of normal. Note that both the intravenous injection of 4 per cent sodium chloride solution (shown by arrows) and the injection of adrenal cortical extract (4 to 8 cc. daily, shown by A. C. E.) appeared to initiate diuresis and weight loss, with a rise in the levels of plasma chloride and a retention of chlorides despite the diuresis. On March 19 plasma sodium was 129.6 and on March 21, 131.8 milliequivalents per liter. He died of renal insufficiency.

The reversible features of the low salt syndrome, either from spontaneous remission or therapy with salt, suggest that it is a state of renal insufficiency dependent on low plasma levels of sodium and chloride (table 2). The diuretic and nitrogen-lowering action of hypertonic saline solution has sometimes been dramatic; for example, in the following case.

A man aged 67 (case 11) with arteriosclerotic heart disease and severe ascites and edema lost over 500 milliequivalents of chloride in his urine in ten days as a result of mercurial and xanthine diuretics. His net loss amounted to 329 milliequivalents. The characteristic symptoms and signs appeared, his urinary output diminishing (to a low of 283 cc. on one day). A transfusion of whole blood (500 cc.) did not initiate diuresis, nor did the use of 5 per cent dextrose solution intravenously (1 liter); probably the latter only served further to dilute his electrolytes. But the intravenous injection of 255 milliequivalents of salt (16 Gm.) apparently restored electrolyte balance sufficiently to allow diuresis to begin. Within four days his output increased to well over 1 liter; however, the chloride output of his urine remained exceeding low and his symptoms disappeared. Although he had gained 2.9 Kg. in weight, the diuresis initiated by salt resulted in a loss of this amount and a further loss of 1 Kg.

The mechanisms leading to the development of this bizarre form of renal insufficiency are not known. Some toxic action of mercurial diuretics on the kidneys is probably not the predominating factor; a high fluid intake precipitated the state in 3 instances.

A man aged 65 had ascites and edema resulting from arteriosclerotic heart disease (case 12). He had received three injections of mercurial diuretics at five day intervals, which caused a total loss of 465 and a net loss of 243 milliequivalents of chloride. No mercurial compound was given for fourteen days. When the patient's intake of fluids was raised from 1,200 to 2,500 cc. per day for four days his urinary volume failed to increase; in fact, it became slightly depressed. He became drowsy, disoriented and weak. Chlorides in plasma were found to be 73.5 milliequivalents per liter and nonprotein nitrogen 61 mg. per hundred cubic centimeters. Reduction in the intake of fluids was followed by a diuresis of water, negligible quantities of chlorides appearing in the urine, and his plasma chlorides rose moderately. He continued in a hypochloremic state until relieved by the injection of saline solution and a more liberal dietary intake.

The same case illustrates another point. When the condition is more or less borderline with slight diminution of urinary volume and depression of electrolytes there may be chronic elevation of the nonprotein and urea nitrogen in blood, and the urea clearance becomes depressed. This patient's urea clearance was 46 per cent of normal when his electrolytes were at low normal levels. When his plasma chlorides fell to 73.5 milliequivalents per liter, the urea clearance was 10 per cent of normal and the blood urea nitrogen 67.8 mg. per hundred cubic centimeters. A reversal of the process by the injection of hypertonic saline solution and the addition of salt to his diet resulted in a rise in his plasma chlorides to 93.4 milliequivalents per liter and in his urea clearance to 62 per cent. This phenomenon was observed in other patients. The effect of hypertonic sodium chloride solution in reversing the oliguria is shown in chart 2.

This same type of renal insufficiency may follow excessive loss of chlorides as a result of vomiting when replacement therapy has been inadequate.

A woman aged 78 had had partial intestinal obstruction which was relieved by surgical intervention (case 21). Oliguria and retention of nitrogen in the blood was a constant feature of her postoperative course, and she was believed to be near death. Replacement of the electrolyte loss by hypertonic saline solution resulted overnight in dramatic improvement. Diuresis became established. The blood urea nitrogen fell to normal levels, and the patient was able to resume normal activity. That this change was not coincidental is suggested by the rapid onset of adequate renal function (chart 3).

Of the 11 patients who recovered, either spontaneously or as a result of the injection of sodium chloride solution, 4 subsequently died in a similar state of renal insufficiency. Provided early treatment was instituted, recovery was rapid when salt was given and slow when it was not. Sometimes a dose much less than that calculated to be ideal began recovery. Excess salt resulted in the accumulation of edema, as is well known.[7]

The injection of hypertonic sodium chloride solution was not accompanied with adverse symptoms when plasma electrolytes were low. Venous pressure was always measured simultaneously; occasionally it fell slightly, more often there was no change, but sometimes it rose 2 to 3 cm. of saline solution after the first 100 cc. had been given, rising no further. The presence of pulmonary congestion did not contraindicate the injection of the hypertonic sodium chloride solution. When the electrolyte concentration in plasma was low, minimum pulmonary edema was observed in 2 cases to regress while sodium chloride solution was being injected. Even large quantities of hypertonic saline solution (6 per cent) sometimes failed to elevate venous pressure significantly above an already high value.[7] Diffusion from blood into tissues was rapid, and higher plasma levels were not always maintained. Plasma chlorides were measured in 2 cases ten to fifteen minutes, ten to twelve hours and twenty-four hours after the injection. An immediate rise of 7.5 milliequivalents per liter, caused by the injection of 5 Gm. of sodium chloride, produced one of only 3.5 milliequivalents twenty-four hours later. Six grams of salt produced a rise of 7.2 milliequivalents in ten minutes, but only a rise of 2.1 the next day. Both patients were edematous. Their urine did not manifest a significant increase in total chloride content, although the concentration of single specimens was increased.

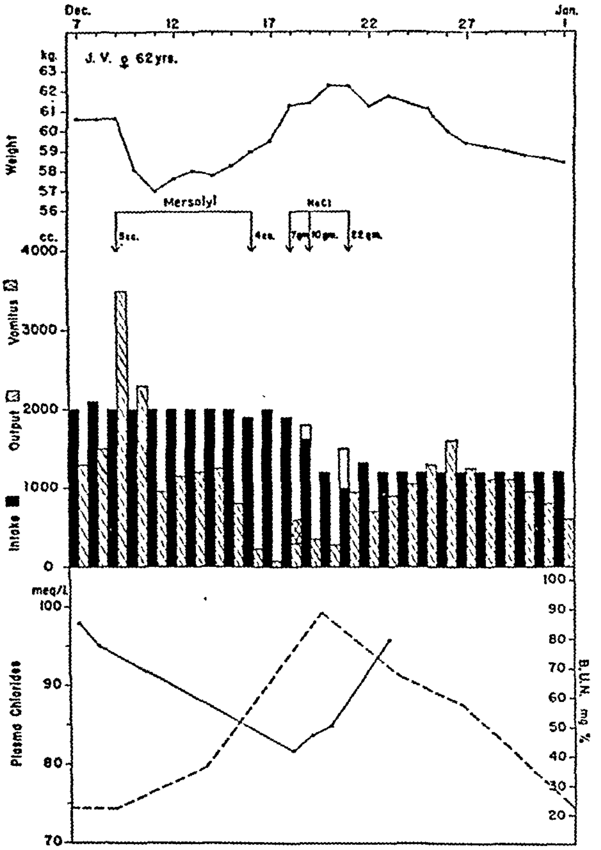

Chart 2 (case 13).—A woman aged 62 displayed chronic congestive failure following the second of two attacks of coronary occlusion. On December 9 the injection of 5 cc. of mersalyl and theophylline resulted in a fall of plasma chlorides. A discrepancy between the intake and output occurred, which was associated with a gain in weight of 5.2 Kg. On December 18 plasma sodium was 124.5 milliequivalents per liter and carbon dioxide-combining power 17.9. On the next day blood urea nitrogen, which had been at normal levels, was 88.3 mg. per hundred cubic centimeters. The injection of 39 Gm. of sodium chloride in 5 per cent solution resulted in diuresis, loss of weight and return of plasma chlorides and blood urea nitrogen to normal levels. Note the lack of response of the urinary volume to mersalyl on December 16. The patient was taking a diet containing 0.5 Gm. of salt daily.

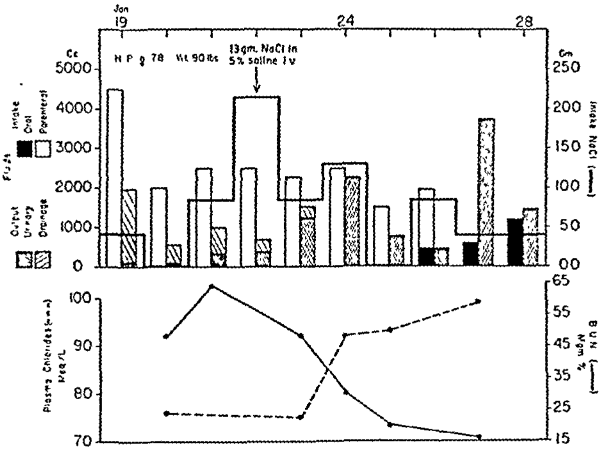

Chart 3 (case 21).—A woman aged 78 had had partial intestinal obstruction, which was corrected surgically. Wangensteen suction drainage from the stomach was instituted postoperatively. There was a large discrepancy between her intake and output of fluids, most of which consisted of 5 per cent dextrose in water injected intravenously. On Jan. 23, 1949 she was comatose and was considered in terminal renal insufficiency. When an attempt was made to correct the electrolyte disturbance by the intravenous injection of 21.5 Gm. of sodium chloride in 5 per cent solution, diuresis became established. Nitrogen retention disappeared, and there was a dramatic improvement in her symptoms with complete recovery.

COMMENT

Peters and Van Slyke[8] have discussed the matter of renal insufficiency resulting from sodium depletion in these words:

> The nonprotein nitrogen of the blood tends to increase in all conditions in which the fluids of the body are greatly depleted, whether the dehydration results from simple deprivation of fluids or from excessive loss of fluid through vomiting or diarrhea. These increases seem to arise chiefly from oliguria, with accelerated protein catabolism and impaired circulation playing contributory roles. A voluminous literature has sprung up about a condition known as "uremia or azotemia from lack of salt," in which it is implied that accumulation of nonprotein nitrogen in the blood is a direct response to depletion of the sodium and chloride of the body. Such a theory finds little physiological support. Deficits of chloride and sodium in the body fluids are generally indications of dehydration. . . . Accumulations of nonprotein nitrogen in the blood in this condition can be eliminated by the administration of enough water to provoke diuresis, although the deficits of chloride and sodium may be aggravated by such therapy. If salt depletion contributes to azotemia at all, it is probably through its injurious effects on bodily functions in general, and especially upon the circulation, not because it has any particularly deleterious influence upon the kidneys. It has been reported[9] that injections of small volumes of concentrated sodium chloride solution are beneficial in restoring the excretory activity of the kidneys; but such salt injections increase the volume of extracellular fluid by abstracting water from the tissue cells, thereby providing more water for the formation of urine.

They have suggested further that the elevation of blood urea is "probably only a manifestation of the circulatory collapse which results from sodium depletion," disagreeing with certain European writers on the subject.[9]

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The syndrome here described appears to be a state of renal insufficiency dependent on a disturbance of the normal concentration of sodium chloride in extracellular fluids. It is not dehydration, as absolutely defined, because large stores of water containing dilute sodium chloride solution may be present. It is not dependent on alkalosis, for the carbon dioxide–combining power of the blood may be altered only slightly. It can be initiated by depleting the body of sodium chloride through the use of either mercurial diuretics or other measures, by producing a large discrepancy between the intake and the output of fluid or by excessive loss of salt through abnormal routes. It is often reversible by restoring the concentration of sodium chloride in body fluids to normal, a procedure which can cause diuresis and a return of renal function to higher values. It may accompany but is not always dependent on circulatory insufficiency; it is usually associated with prior renal disturbance, either functional or organic.

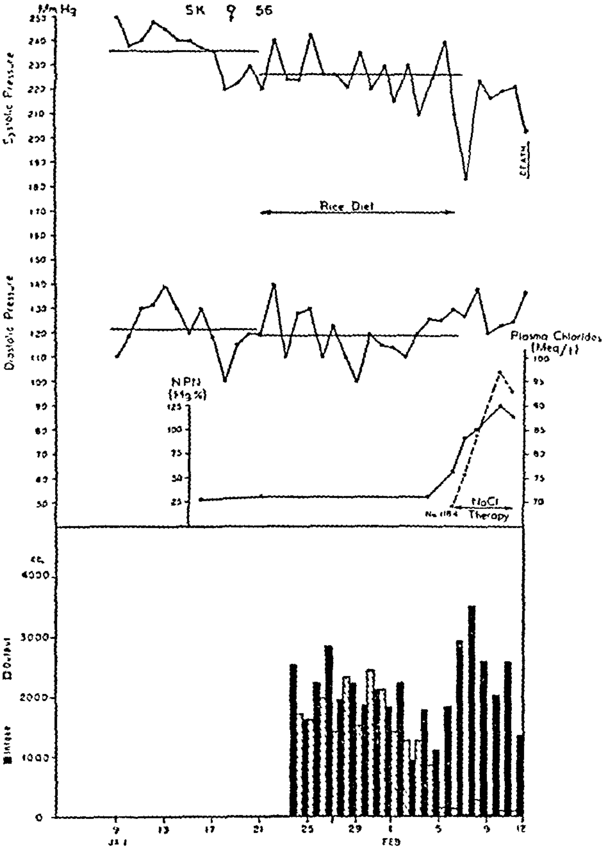

Chart 4 (case 9).—A woman aged 56 had rapidly progressive hypertensive vascular disease without retention of nitrogen but with diminution of renal function. When she was given a diet containing 0.5 Gm. of salt (rice diet) oliguria developed fourteen days later. This development was rapid, and the patient complained of nervousness, apathy, loss of appetite and weakness. Her intake of fluids remained high in spite of the obvious overhydration which was developing. Plasma chlorides were low, as was sodium, and an attempt to reverse the oliguria by the use of intravenous hypertonic saline solution was to no avail. She died of uremia.

It is probable that the excessive use of dextrose solution in water without sodium chloride postoperatively contributes to renal insufficiency and initiates the low salt syndrome in elderly patients or in those who already have some renal disturbance of minor degree. The recognition of this syndrome becomes important, because immediate therapy may be life saving. Delay has resulted apparently in irreversible changes in the function of the kidneys.

This condition is apparently the same as one described recently by MacGuire,[10] who reported 3 cases of hypertension associated with congestive failure. On diets low in salt, and in 2 instances after the use of mercurial diuretics, blood urea levels rose considerably only to fall when salt was added to the diet. Electrolyte levels in plasma were not reported, however. A related situation may be one reported by Muirhead and Fromm,[11] who found dilution of extracellular sodium and chloride in the syndrome of acute renal insufficiency. It is possible that many cases of so-called postoperative, reflex or essential anuria belong in the group here discussed. Renal failure resulting from the "salt-losing nephritis" of Thorn, Koepf and Clinton [12] may depend on the same underlying mechanism, although the kidneys of their patients were able to excrete large volumes of water. Chabanier and Lobo-Onell[9] have described at length a condition occurring after operations, characterized by hypochloremia and azotemia with low urinary output reversed by the intravenous administration of hypertonic saline solution. Although blood pressure was often lower when this state had developed, shock was not present. Recently, Soloff and Zatuchni [13] reported 7 cases (4 fatal) of this syndrome in congestive failure and in hypertension treated by isotonic sodium chloride solution. They stated that it is not uncommon. They did not stress, however, the oliguria which in my experience accompanies this condition (chart 4). These observations indicate that there may sometimes be an inverse ratio between sodium and chloride in body fluids and nitrogenous products in the blood; they further suggest some obscure relation between the concentration of sodium chloride in plasma and the ability of the kidneys to excrete nitrogen. It must be emphasized that serious disturbances of acid-base balance were not present.

The mechanism whereby lowered electrolytes contribute to renal insufficiency is unknown. The lowered urea clearance and elevation of the blood urea suggest that renal blood flow is reduced. More exact studies will be necessary to prove this point. Theoretically, if adequate water is available and plasma is being filtered by glomeruli, normal kidneys should be able to excrete water and retain salt until electrolyte balance is restored. That these kidneys can excrete water to some extent is shown by the two experiments in which adrenal cortical extract apparently initiated a water diuresis. That these kidneys cannot excrete salt is demonstrated by the negligible quantities of chlorides in the urine and the failure of chlorides to appear even when diuresis was stimulated by mercurial compounds.

The normal kidney performs a marvelously exact function of regulating body fluids and electrolytes and maintaining acid-base equilibrium. The abnormal (hypertensive, cardiac or aged) kidney may be deficient in some of these functions. Whether the low salt syndrome occurs only in the presence of renal disease or renal functional disturbance and never develops when the kidneys are perfectly normal cannot be stated at this time. In every patient observed the kidneys were diseased functionally from congestive failure or anatomically from other causes.

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10. MacGuire, W. B., Jr.: Risk of Uremia Due to Sodium Depletion, J. A. M. A. **137:** 1377 (Aug. 14) 1948.
11. Muirhead, E. E., and Fromm, C. S.: Severe Acute Renal Insufficiency with Recovery, J. A. M. A. **137:** 1378 (Aug. 14) 1948.
12. Thorn, G. W.; Koepf, G. F., and Clinton, M., Jr.: Renal Failure Simulating Adrenocortical Insufficiency, New England J. Med. **231:** 70, 1944.
13. *Soloff, L. A., and Zatuchni, J.: Syndrome of Salt Depletion, J. A. M. A.* **139:** 1136 (April 23) 1949.

Congestive circulatory failure is the result of a renal disturbance of salt-and-water-regulating mechanisms. The syndrome here reported represents in some respect the advanced stage of that disturbance in which neither salt nor water is excreted. The deficiencies of the cardiac, diseased or aged kidney, therefore, may contribute to a precarious state of water and salt balance which can be disturbed by well meant therapeutic measures into fatal deficiencies of other functions.

The mechanism of the partial renal shutdown is not understood, but the sequence of events may be somewhat as follows:

1. Salt depletion from mercurial diuretics,[14] excessive hydration due to a high intake of fluids or, perhaps, spontaneous failure of the kidneys to excrete water occurs.
2. Some stimulus resulting from an abnormally low sodium chloride level in plasma or extracellular fluids causes a reduction in renal blood flow or an excessive tubular reabsorption of both salt and water. Water moves into cells, disturbing their function.
3. Urinary volume is diminished and nitrogen retention begins.
4. Continued intake of fluids enhances the relative overhydration. The function of myocardial as well as other cells is altered adversely by this dilution of *le milieu intérieur.*
5. Uremia from renal shutdown develops.
6. When the proper balance of sodium chloride in fluids is restored *le milieu intérieur* becomes more favorable for cellular function and the kidneys again begin to excrete water and nitrogen.

The return of renal function probably is not dependent on a restoration of circulatory efficiency through increases in the blood volume, for venous pressure, a rough indication at least of the state of the blood volume, was not reduced during anuria. Nor is it dependent on adequate levels of blood pressure. Although in some cases the blood pressure tended to be lower, in others there was little change and in the 2 patients with severe hypertension blood pressure remained high. It is probably not dependent on the abstraction of water from cells to make water available for the kidneys; plenty of water was often available. Cellular hydration in the kidneys, as elsewhere, may have interfered with function, adequate concentrations of sodium chloride removing water from cells and in some manner increasing renal and cardiac function.

The use of hypertonic sodium chloride solution for making up the salt deficit deserves comment. The use of solutions composed of concentrations of sodium chloride necessary to overcome deficits is much more logical than is the routine employment of isotonic sodium chloride solution. When overhydration is present and relative acid-base balance is undisturbed, sodium chloride in concentrated solution should be used (Gamble,[15] his chart 35 C). Concentrations as great as 20 per cent have been advocated.[9] When dehydration is present and there is a water deficit, water should be used. Only when deficits of both are present to an equal degree is isotonic sodium chloride solution the concentration of choice. When acidosis or alkalosis are found, the fluid which is administered should contain anions or cations to make up the deficit. Good kidneys can compensate for errors in the concentrations of electrolytes administered; poor kidneys, or those with disturbed function, often cannot. The intelligent use of fluids therefore requires a knowledge of the relative concentrations of electrolytes in plasma and a readjustment of those in the fluids administered to compensate for deficits. The use of standard concentrations for all purposes is to be deplored.

The hazards of the rigid restriction of sodium chloride in the diets of cardiac patients, used concomitantly with mercurial diuretics, cannot be overemphasized. The low salt diet has proved a valuable adjunct to the management of congestive circulatory failure, preventing the accumulation of edema fluid. However, when agents which act specifically to increase the renal excretion of chlorides are also used, depletion of salt can be expected. Theoretically, the same situation might occur if the sodium in intestinal fluids were bound by adsorption on to the newer ion-exchange resins.[16] If deficits of salt can be produced in the body by these resins the frequent occurrence of this syndrome can be predicted from their use. It therefore becomes obvious that careful attention must be paid to the water and electrolyte balances of the body when these disturbances of balances are being treated, and especially when the intake of sodium chloride is severely restricted.

SUMMARY AND CONCLUSIONS

A syndrome of renal failure has been described which results from (*a*) retention of water and dilution of electrolytes or (*b*) excessive depletion of body salt, usually by the use of mercurial diuretics. Sometimes this condition can be reversed by the intravenous injection of hypertonic sodium chloride solution in amounts sufficient to restore electrolyte-water equilibrium. This syndrome is not uncommonly seen in congestive circulatory failure.

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ABSTRACT OF DISCUSSION

Dr. J. Edwin Wood Jr., Charlottesville, Va.: The syndrome which Dr. Schroeder describes has been encountered by many physicians. Fortunately, in patients treated outside the hospital, an extremely low salt diet is difficult to maintain. Twenty-four hour urinary sodium excretion tests indicate clearly that many patients actually have a higher intake of sodium than that prescribed. My associates and I have used mercury sparingly outside the hospital, and consequently our cases of low salt syndrome have occurred in patients in the hospital with severe heart failure or in hypertensive patients purposely thrown into this state with a low sodium diet and repeated mercurial injection. In this latter group, the blood pressure invariably falls in our experience and the azotemia seems to be related to this, with an accompanying diminution in glomerular filtration rate. The picture Dr. Schroeder describes in treated congestive circulatory failure of long standing certainly may have added contributory factors, but the basic mechanism of diminished renal blood flow may also be present. It is interesting to speculate that the low serum level of sodium or chloride, or both, may adversely affect renal function in some way, but just how and whether this is really true remains to be seen. McCance in 1936 produced a similar low salt syndrome in normal subjects with similar symptoms: accompanying azotemia and low serum sodium and chloride values following salt restriction and induced sweating. McCance was of the opinion, after appropriate studies, that diminished glomerular filtration was a prime factor. Of course, the subjects did not have edema but were allowed large amounts of water so that the extracellular features were essentially the same. Therefore, a damaged kidney or one with chronic circulatory disturbance does not appear to be prerequisite for the production of the syndrome. In this regard, a better understanding of potassium excretion would help. Possibly, long periods of dietary sodium depletion have led to potassium depletion as well, and although one would expect potassium retention during the low salt syndrome, actually a total deficit might be present. It is possible that replacement of potassium as well as sodium should be considered in some cases. Incidentally, in the intermittent use of ammonium chloride large amounts of urinary potassium may be lost, particularly in the first three or four days of ammonium chloride dosage. Whatever the mechanism involved in the production of the low salt syndrome, we should be constantly aware of the possibility and seek a better understanding of the reason for recovery in some patients but not others, following administration of hypertonic saline solution. The too frequent use of mercurial diuretics may lead to undesirable states. Absence of diuresis following use of a mercury compound is most important and at once raises a suspicion that low salt syndrome may be present. If this is determined by a study of the electrolytic pattern, emphasis should again be placed on the point that the patient has "water intoxication," and remedial salt must be given in hypertonic solution, as pointed out by Dr. Schroeder.

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[14] Schroeder, H. A.: Studies on Congestive Heart Failure: IV. The Effect of Various Diuretics on the Excretion of Water and Chlorides, to be published.

[15] Gamble, J. L.: Chemical Anatomy, Physiology and Pathology of Extracellular Fluids, Cambridge, Mass., Harvard University Press, 1947.

[16] Dock, W.: Sodium Depletion as a Therapeutic Procedure: The Value of Ion-Exchange Resins in Withdrawing Sodium from the Body, Tr. A. Am. Physicians **59**: 282, 1946.

Dr. Henry A. Schroeder, St. Louis: It seems to me that the pendulum has swung too far on the question of salt restriction. If one takes a general philosophic point of view on any new therapeutic procedure and new methods for intensifying it, one may expect to find symptoms and disturbances dependent on this form of therapy. As Dr. Wood said, the low salt syndrome probably has not been seen more frequently because diets have not been low enough. With the development of salt-free milk, one can maintain an adequate protein intake with a lower intake of sodium chloride. The use of the new ion-exchange resins, which appear to absorb sodium from the gastrointestinal tract, may lead to more cases of this condition if the intake of sodium chloride is severely restricted as well. The use of a mercurial diuretic every day as a maintenance dose has in my experience and in that of others led to the development of the low salt syndrome. I agree with Dr. Wood that shock or a state of semishock may contribute somewhat to the low renal blood flow and diminished excretion of sodium chloride, but in many cases there is no clinical evidence of shock, at least during the onset of the condition. The question of potassium loss is important and deserves further study. It should be pointed out that mercurial diuretics may increase the excretion of potassium and even of calcium and magnesium under certain conditions. There is also a chronic state of this condition in which there is diminution of renal function for weeks, with oliguria and nitrogen retention which may reverse itself on administration of adequate electrolytes and restoration of their concentrations.

Paraplegic Patients.—It is unfortunate that many paraplegic patients misunderstood the assurances given them by the Army that over 80 per cent of them would walk. These tragic individuals have learned in these last few years the difference between ambulating and walking. They, quite naturally, had expected to walk in the manner to which they were accustomed before their injury and irrespective of the level of that injury. This overenthusiastic approach did more harm than good and led to ill advised actions by members of Congress and other well meaning laymen which made the paraplegic patient consider himself in a group set aside from other seriously wounded and permanently handicapped veterans. The problems of the care and treatment of patients with paraplegia must be thoughtfully carried out to a solution. There is no doubt but that the problems of these patients have been built up too strongly in the public mind. They have become the center of much interest, not all medical, which may eventually make their care even more difficult. The very word "paraplegic" is objectionable. It is frequently heard from the lips of patients and lay persons, singling out and stamping these patients as doomed with a special and completely hopeless disability. A less pointed, less specific term should be adopted. These patients are seriously and tragically injured persons and should be treated as such, but they should not be singled out for overindulgent publicity from those with other types of injury just as serious and, in many cases, more disabling.—Loyal Davis, M.D., *Surgery, Gynecology and Obstetrics,* July 1949.

THE GENERAL MANAGEMENT OF RHEUMATOID ARTHRITIS

CHARLES RAGAN, M.D.
New York

What is described as rheumatoid arthritis may represent more than one disease. The onset is variable, the course is characterized by remissions and exacerbations, and it is impossible to forecast the future course of events in the individual patient. Diagnosis is difficult in early cases, and an exact prognosis may be difficult even in cases of long duration.

This paper will concern itself solely with rheumatoid arthritis of the peripheral joints. Rheumatoid, or Marie-Strümpell, spondylitis will not be discussed, because it is apparently a different disease and in our opinion should not be classified as rheumatoid arthritis. The reasons for this exclusion are several. The sex distribution is entirely different. In rheumatoid spondylitis 80 per cent of the patients are men, but in rheumatoid arthritis only 23 per cent are men. The agglutination of group A hemolytic streptococci is positive in 50 per cent of patients with rheumatoid arthritis, but such tests have been positive in only 2 per cent of 169 cases of spondylitis. In this 2 per cent there was no peripheral joint involvement associated with the spondylitis. Subcutaneous nodules are present in 10 to 20 per cent of patients with rheumatoid arthritis, but, according to Simpson and Stevenson,[1] are absent in rheumatoid spondylitis. In the 169 cases of this series the distribution of peripheral joint involvement differed greatly from that seen in 85 cases of typical rheumatoid arthritis (see the table).

Distribution of Peripheral Joint Involvement

	Rheumatoid Arthritis of Spine (Marie-Strümpell) 169		Typical Rheumatoid Arthritis (Peripheral Joints) 85	
Number of Patients	Number	Per Cent	Number	Per Cent
Spine only	63	37	0	0
Hip	42	25	13	15.3
Shoulder	36	21	45	53.0
Knee	45	27	63	74.3
Ankle	19	11	54	63.5
Foot	17	10	40	47.0
Elbow	7	4	40	47.0
Wrist	6	4	60	70.6
Hand	16	9	79	93.0
Jaw	2	1	4	4.7

USUAL OUTCOME OF RHEUMATOID ARTHRITIS

Treatment is directed toward changing the natural course of a disease. Hence, before the treatment of rheumatoid arthritis is discussed, it is important to have some information on its natural history. If patients with rheumatoid arthritis are followed over a long period of time, their ultimate physical state will fall into one of the following five categories: (1) bedridden

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Aided in part by a grant from the Masonic Foundation for Medical Research and Human Welfare.

From the Edward Daniels Faulkner Arthritis Clinic of the Presbyterian Hospital and the Department of Medicine, College of Physicians and Surgeons, Columbia University.

Read before the Joint Meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1949.

[1] Simpson, N. R. W., and Stevenson, C. J.: An Analysis of Two Hundred Cases of Ankylosing Spondylitis, Brit. M. J. 1: 214, 1949.

or chair-ridden; (2) deformities or flexion contractures with continuing complaints of joint pains (i. e., disease still active and may be progressing); (3) deformities or flexion contractures without complaints (commonly called burnt out cases); (4) occasional joint pains without deformities or flexion contractures which interfere with existence, and (5) no signs of arthritis.

It has been possible to follow 374 patients with rheumatoid arthritis for more than five years. The mean period of observation was eleven years, the longest follow-up period has been twenty years. These patients were seen in the Edward Daniels Faulkner Arthritis Clinic of the Presbyterian Hospital. The diagnosis was made by at least three clinicians. The average duration of arthritis before the first visit was between one and two years. At the end of the period of observation, it was possible to classify each patient according to one of the categories previously mentioned. Ten per cent were confined to bed or chair; 28 per cent had flexion contractures and the arthritis was active; 12 per cent had flexion contractures with inactive arthritis. A considerable number (26 per cent) at the termination of the period of follow-up had no evidence of arthritis, and another large group (22 per cent) had minimal complaints (occasional joint pains) referable to their arthritis. The patients who had a good end result achieved this with varying forms of therapy and in some instances with little or no treatment. In these patients the institution of heroic but potentially dangerous therapeutic measures would not have been justified. However, in the group of patients who were bedridden or had deformities and flexion contractures which interfered with their economic and social existence (39 per cent) the situation is different. A therapeutic measure which might have dangerous potentialities or which might interfere with the patient's life situation would be justified if the ultimate outcome was improved. Among potentially harmful therapeutic agents are the following: (1) gold compounds—which will be discussed in another paper; (2) multiple transfusions; (3) radiotherapy, and (4) fever therapy. Forms of treatment which seriously interfere with a patient's life situation are (1) rest, including bed rest and (2) climatotherapy.

PROGNOSIS

Before the institution of therapy in a disease with such a variable outcome, every attempt should be made to differentiate the patient with a good prognosis from the one who will do poorly. Short and Bauer[2] in their study eliminated many factors which in their opinion had no prognostic value. These included the following: sex, prodromal symptoms, progressive or intermittent course before admission, acute or gradual onset, presence of anemia, family history of rheumatoid arthritis or rheumatic fever, and onset in relation to the menopause. Patients seen in the first year of their disease did better than the group as a whole, and patients with severe symmetric involvement—typical rheumatoid arthritis—did less well than those with atypical forms of the disease. It is believed that in the absence of serologic or roentgenographic evidence of rheumatoid arthritis, the diagnosis of the disease in the first year is extremely difficult and the possibility of a mistaken diagnosis is great. In the patients we have followed, an attempt was made to exclude adult rheumatic fever simulating rheumatoid arthritis by use of serologic tests in addition to the usual clinical and roentgenologic methods. Forty patients were observed during approximately the same period who had adult rheumatic fever clinically indistinguishable from early rheumatoid arthritis, and these patients recovered completely from their arthritis. In the group of 374 patients with rheumatoid arthritis, 104 were seen in the first year of their disease. Of the 104, 16 per cent had arthritis for less than one year and had no recurrence. The patients in this 16 per cent originally were thought to have rheumatoid arthritis. In retrospect, that diagnosis may have been in error. Therefore, in the absence of a severe typical disease, prognosis is almost impossible on clinical grounds. It has been our impression for many years that a positive test for agglutination of group A hemolytic streptococci in the serum of a patient with rheumatoid arthritis was of poor prognostic significance, and in this group of patients this impression seems to be borne out. Forty-six per cent of the patients had a positive streptococcus agglutination and 46 per cent a negative (results were doubtful in 8 per cent); therefore these groups are comparable. The first 3 categories—bedridden, flexion contractures but active, and flexion contractures and inactive—may be considered a poor end result, while occasional joint pains and no arthritis is a good end result. In the group with a positive agglutination (fig. 1) 70 per cent had a poor end result, while in the group with a negative agglutination 68 per cent had a good end result. Thus a positive streptococcus agglutination test is a poor prognostic sign. This correlation is far from

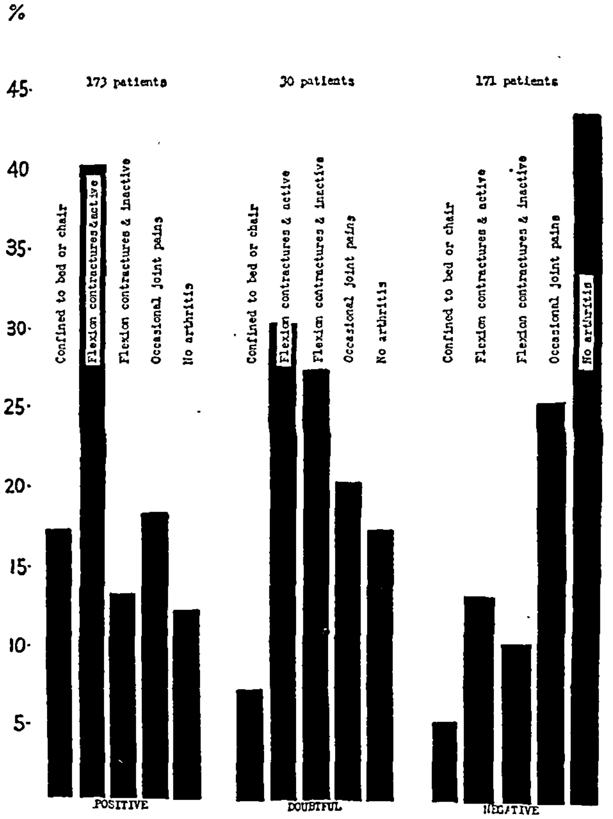

Fig. 1.—Physical state of patients with rheumatoid arthritis at the end of period of observation according to their original group A hemolytic streptococcus agglutination. (Percentages are of the total of each group; 172 positive, 171 negative.)

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[2] Short, C. L., and Bauer, W.: The Course of Rheumatoid Arthritis in Patients Receiving Simple Medical and Orthopedic Measures, New England J. Med. 238: 142, 1948.

absolute, for some patients with a positive agglutination do well and some with a negative agglutination end badly. However, it is now believed that the presence of severe typical rheumatoid arthritis or a positive streptococcus agglutination warrants heroic measures.

VALUE OF VARIOUS FORMS OF THERAPY

The value of various forms of therapy in rheumatoid arthritis must be considered in the light of the foregoing discussion of its natural history.

Rest and Exercise.—As has been stated, chrysotherapy will not be discussed herein but attention will be confined to certain measures which are directed toward improvement of the general health of the patient. The value of these measures has not been proved by statistical studies, but it is generally considered to be real. The most important measure is rest. By rest is meant rest for the body as a whole—in bed, if necessary—and rest for the inflamed joints, either by bed rest or by splinting in plaster. Rest must always be supervised; when unsupervised, bed rest is worse than no rest at all. The ideal is rest coupled with exercise. Exercise should always be within pain and fatigue limits. It should be directed toward strengthening muscles which if lost will result in flexion contractures, which are to be avoided if at all possible. Rest should be graduated, depending on the activity of the disease. It may vary between complete rest in bed for the patient with the severe, active stage of the disease to brief periods on a couch before dinner for the patient with a mild form of the disease. Some believe that ideally the patient with rheumatoid arthritis should be treated as is the tuberculous patient with prolonged care in a sanatorium. However, there are certain obvious defects in this argument. First, there are practically no facilities for hospitalization of the patient with rheumatoid arthritis in the United States; economically, it is not feasible for the average wage earner or housewife to have this. Second, there is some doubt in the minds of patients with rheumatoid arthritis that prolonged bed rest benefits them. Some feel that stiffness is intensified by it. In the Scandanavian countries, where hospital facilities for prolonged care are available, the search continues for a specific treatment for the disease. In a limited experience in the arthritis clinic, using the facilities of Goldwater Memorial Hospital, the results of prolonged bed rest, exercises and a nutritious diet were not impressive, even though rest is generally considered to be of great importance.

Prevention of Deformities.—The prevention of deformites is also in this same category. Flexion contractures should be prevented if possible by the use of molded plaster splints. These can be worn with practice and encouragement by the average patient but should be removed at regular intervals for supervised exercise. Since we have followed patients who have continued to have an active form of the disease for over twenty years, this continued supervision may be difficult. However, in the acute episode such simple plaster splints can be exceedingly helpful. The detailed treatment of flexion contractures is the subject of another paper.

Salicylate and Other Therapy.—The drug of choice in the treatment of rheumatoid arthritis is salicylate. Obviously opiates are to be avoided in such a chronic disease, but small doses of codeine may be used to tide a patient over a crisis. Use of aminopyrine is to be avoided. In 3 documented cases agranulocytosis has occurred in patients with rheumatoid arthritis who had been given this drug. Cinchophen and neocinchophen are also to be avoided because of their potentialities as hepatic poisons. Salicylate is a relatively innocuous drug, and the patient with long-standing rheumatoid arthritis has confidence in it. Time and time again patients have stated that acetylsalicylic acid is the only drug which has helped them. At the clinic we have not been able to convince ourselves that there is any difference between sodium salicylate and acetylsalicylic acid as to effectiveness or toxicity. Enteric coating of either may permit an increased dosage to be tolerated. Sodium bicarbonate should be avoided, since the salicylate blood level falls and free salicylate excretion in the urine increases following its administration. Aluminum hydroxide preparations relieve some of the gastric distress, do not interfere with salicylate metabolism and can be given with salicylate. Para-aminobenzoic acid has recently been advocated as an adjunct to salicylate therapy to increase the blood level and to decrease the excretion of free salicylate. The work is based on priming doses of para-aminobenzoic acid. In our experience, this drug causes a certain amount of gastric irritation, and the use of 8 Gm. of it in conjunction with 3.6 Gm. of sodium salicylate failed to raise the blood level and did not materially influence the excretion of any of the salicylate fractions studied in the urine including salicyluric acid, free salicylate, salicyl-glucuronide and gentisic acid. This approaches the maximum dose of para-aminobenzoic acid which our patients are able to tolerate or take conveniently in conjunction with salicylate. We have found that it is simpler to increase the amount of salicylate administered. Salicylate acts as an analgesic to the best of our knowledge in rheumatoid arthritis, and this analgesic effect is not complete. Flexion contractures may develop on full salicylate dosage.

Physical Therapy.—Physical therapy is important, and simple measures which the patient can perform by himself at home are the most effective. Muscle-setting exercises within pain and fatigue limits should be encouraged strongly. Active exercise for the patient able to perform it and passive exercises when active exercises cannot be carried out are the mainstays of the physical treatment for these patients. Again, the aim is to prevent flexion contractures by rebuilding extensor muscle groups and thereby overcoming the stronger flexor groups.

The place of psychotherapy has not as yet been fully evaluated. In the prodromal period these patients may often experience emotional shocks. Intensive psychotherapy is a tedious process. Often when the psychiatrists have been asked for help, lack of insight or an immature attitude on the part of the patient has prevented help from such therapy. Patients with severe long-standing rheumatoid arthritis are chronically ill, with all that term implies of a warped and dismal outlook on life in general. Whether this is the result of the disease or the cause of the disease one cannot say.

Effect of Climate.—Adequate studies have not been carried out concerning the effect of climate on patients with rheumatoid arthritis. In Sweden [3] a tropical ward

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3. Edström, G.; Lundin, G., and Wramner, T.: Investigations into the Effect of Hot, Dry Microclimate on Peripheral Circulation, etc., in Arthritic Patients, Ann. Rheumat. Dis. 7:76, 1948.

has been used, and a majority of the 18 patients studied have shown objective improvement after a stay of one hundred days in this ward. In a disease with such a variable prognosis a large series of patients would have to be studied to arrive at a definite conclusion. Against the indefinite benefit to be derived from a move to a more equable climate must be weighed the economic hardships as well as the disruption of family ties. Our policy has been to suggest this only if financial hardships will not develop and if serious dislocation of family relationships will not follow such a move.

Blood Transfusions.—Multiple transfusions have been advocated for the patient with rheumatoid arthritis. In some cases a temporary response may follow such a series, but no studies have been reported which would be acceptable in the light of the varied end result described here. After many and frequent transfusions the hazards of homologous serum jaundice are real, and in a disease with such a chronic course many transfusions would be necessary. Barsi's report on the curative effects of transfusions of blood from pregnant women has not been confirmed in this country, but recently the use of pooled postpartum plasma has been favorably reported. Various fractions of blood—red cells, serum albumin and gamma globulin—have not in our experience been followed by dramatic improvement. Lyophilized plasma has had such grave potentialities as a harborer of homologous serum jaundice that, after a fatality occurred, we have hesitated to use it and have had no experience with irradiated lyophilized plasma.

Radiotherapy.—The results of radiotherapy in rheumatoid arthritis have been disappointing. This is in direct contradistinction to its effects in Marie-Stümpell spondylitis, for which many believe that radiotherapy is the treatment of choice. Isolated reports have described the beneficial effects of radiotherapy on single peripheral joints, but in our experience the results have been extremely variable and do not warrant exposure of the patient to a possibly harmful agent.

Fever Therapy.—Fever therapy—induced either by external heat or by reaction to a foreign protein—has been used widely and in the experience of some it offers temporary relief. Others believe that the rigors to a sick person are too violent and that the benefit which is obtained is too brief to justify use of fever therapy.

Rehabilitation for living is an extremely important phase of the treatment of the patient with rheumatoid arthritis. This includes an emotional acceptance of deformities, with physical correction of such as it is possible to alter. It also includes economic rehabilitation whereby a crippled person may be taught a trade by which he may become free, at least in part, of the charity of relatives or of the state. This is possible with a great number of patients, but a willingness to withstand pain to gain a degree of activity is essential, and some patients never achieve this goal.

SUMMARY AND CONCLUSION

The aim of the physician in the treatment of the patient with rheumatoid arthritis should be to allay pain and to prevent flexion contractures or deformities as far as is possible. Although pain may not be completely relieved, if the patient can be encouraged to keep an optimistic attitude—and the end result described here is not too discouraging—his prognosis should be favorable. Once deformities have ensued, a program of reeducation for economic and social self sufficiency is extremely important.

Previous to the announcement by P. S. Hench and associates [4] of the use of compound E of Kendall in the treatment of rheumatoid arthritis, little more than these simple measures could be advocated to change the final outcome of this disease. It is to be hoped that further study of this therapeutic agent may lead to a better understanding of rheumatoid arthritis and to a far different end result after the patients treated with compound E have been followed for five years.

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ABSTRACT OF DISCUSSION

Dr. Hans Waine, Boston: Having described rheumatoid arthritis as a generalized disease of unknown cause, Dr. Ragan correctly stipulates treatment for the total patient, not only for his joints or his foci of infection or his sedimentation rate. He has given the outline of a broad program, one which is based on empirically useful principles and one in which I would follow him in every point. Due emphasis has also been laid on the wisdom of preventing deformities, so as to curtail the tedious and expensive job of rehabilitation later on. It is true that scarring and damage to articular tissues will inevitably result if the inflammatory process persists for longer than a few weeks. Fortunately, socially and economically significant loss of function need not occur. It should be remembered that functional impairment need not be proportionate to either severity or chronicity of synovitis, provided proper precautions are used to insure continued motility by controlled exercises and by the reduction of crippling spasm. In my experience, this disease spontaneously becomes inactive or nearly so in about 30 per cent of patients observed for an average of three years. It therefore follows that at least in this group of patients the maintenance of a high degree of functional capacity is of great importance. As these preventive measures make the most strenuous demands on time and ingenuity of physicians and severely tax the resources of hospitals and patients, one would welcome a reliable prognostic guide during the early stage of disease to allow one to separate the group of patients who have a favorable prognosis. In this respect, the report of correlation between initial serum agglutinations to group A hemolytic streptococci and the continued activity of rheumatoid arthritis is most interesting. I should like to inquire how many tests were necessary in the individual case and within what time after the start of observation the information could be gathered, whether the titers appeared significant and how the results compared to information given by the sedimentation rate. My associates and I have not in our series checked the prognostic value of agglutination reaction, but it is to be hoped that further analyses may substantiate Dr. Ragan's claim for an objective index. Given this information, then, the physician might have one further tool, aside from the general clinical impression, for predicting the outcome of the disease in patients with severe rheumatoid arthritis.

Dr. Charles Ragan, New York: The agglutination of group A hemolytic streptococci has been found to be positive in the first year in about 35 per cent of the patients. After the first year, it runs consistently between 50 and 55 per cent positive. The titer has no great significance. The agglutination should be called positive when there is strong agglutination in the lowest titer. If the titer runs high with weak agglutination in the lowest titer, it is not considered a positive reaction. There is some correlation with the sedimentation rate, but this is not absolute. We have seen patients with a normal sedimentation rate and a positive streptococcus agglutination with poor outcome and some with a greatly elevated sedimentation rate and a negative agglutination who do well. In regard to the types of rheumatoid arthritis, no difference has been observed between atypical and typical rheumatoid arthritis as far as the end result is concerned; usually the streptococcus agglutination is positive in typical severe rheumatoid arthritis.

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[4] Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-hydroxy-11-de-hydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **24:** 181 (April 13) 1949.

Clinical Notes, Suggestions and New Instruments

AGRANULOCYTOSIS FOLLOWING PYRITHYLDIONE (PRESIDON®) THERAPY

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Pyrithyldione (presidon,® 3,3-diethyl-2,4-dioxotetrahydropyridine) is a mild hypnotic and sedative, not a barbiturate derivative, which is now being widely employed. Several reports which recommend its use as a sedative indicate a tendency of the drug to depress the granulocyte count. Koppanyi and others in 1940 noted that in rabbits receiving pyrithyldione by mouth[1] 3 animals exhibited a decrease in the percentage of circulating polymorphonuclear leukocytes from 34 to 11, 24 to 12, and 19 to 9 per cent, respectively. However, the animals survived after the drug was discontinued. An even more significant observation on human subjects was recorded by Polatin and Horwitz in 1947.[2] In a series of 10 patients whose white blood cell counts were carefully followed daily during three weeks' administration of the drug (600 mg. daily), they noted that 1 patient's total white blood cell count dropped from 8,700 to 3,850 with no change in the percentage of polymorphonuclear leukocytes (62 per cent). After a short rest period, the patients were again given 600 mg. of pyrithyldione a day for three more weeks, and again their blood was examined. The patient who had previously manifested leukopenia was lost to follow-up after nineteen days, at which time his white blood cell count had dropped from 6,750 to 5,650. The authors[2] made the suggestion that "there remains the possibility that nine more days of medication might have led to a similar reduction in the white cell count as did the daily administration of 0.6 Gm. over a period of twenty-eight days during the first course. While no leukopenia developed on the second occasion, the possibility cannot be excluded that the first chronic test caused a transient leukopenia in this one case."

The present case is reported because of a severe and complete agranulocytosis apparently related to the administration of pyrithyldione.

REPORT OF CASE

The patient, a man aged 50, previously had been in good health. His past history was noncontributory except for the recurrent use of alcohol for many years. Nevertheless, he was well nourished and took ample rations of vitamins both orally and parenterally. A routine examination several months before his present illness had revealed that the blood count, sedimentation rate and urinalysis were normal. A roentgenogram and cardiogram of the chest revealed normal condition, and the liver was only slightly enlarged. During the past three years this patient had taken various drugs on occasion without any untoward reactions except in one instance. Eight months before his present illness, penicillin that was administered intramuscularly for a prostatic infection provoked a severe allergic type of reaction with urticaria, polyarthritis and angioneurotic edema. Other medicaments which were taken without difficulty both before and after the reaction to penicillin included barbiturates, chloral hydrate, sulfadiazine, bromides, diphenhydramine and tripelennamine.

For about three months before his present illness, the patient had been taking two to three 0.2 Gm. tablets of pyrithyldione a day for nervousness and insomnia with rather satisfactory results. Careful questioning elicited the information that only one other medicament had been used during this time, namely, phenobarbital. The present illness began with a severe sore throat unassociated with fever, cough, upper respiratory infection or pain in the chest. There was at the same time some slight soreness of the gums. Several days later the temperature of the patient rose abruptly to 104 F. The patient was examined at this time, and it was noted that his throat was diffusely red and injected, but without exudate or ulceration. The gums were hyperplastic, somewhat purplish and tender, but without exudate. Physical examination revealed essentially normal conditions except for some enlargement of the submaxillary nodes, which were moderately tender. The blood pressure was 150 mm. of mercury systolic and 100 mm. diastolic. The pulse rate was 120. A throat culture showed the presence of Staphylococcus aureus and a green-producing Streptococcus of the viridans group.

The patient was not given penicillin because of his previous reaction to it; instead, sulfadiazine was prescribed. However, he was severely nauseated and immediately vomited the one dose taken that evening. On the next day examination of the blood revealed a hemoglobin level of 15.4 Gm., red blood count of 5,060,000 and white blood count of 3,000, with 97 per cent lymphocytes and 3 per cent polymorphonuclear leukocytes. The patient was immediately sent to the Presbyterion Hospital, where sedation with pyrithyldione was discontinued and aureomycin therapy was started by mouth. Again he vomited the drug, and after several doses it was discontinued. The patient at this time was acutely and seriously ill, apprehensive and extremely nervous. It was decided to withhold medicaments for forty-eight hours, observing the white blood cell count twice a day in the hope that the patient's own reaction to the infection might provoke a leukocytosis. At this time the white count was 2,200 with 99 per cent lymphocytes and 1 per cent monocytes. The lymphocytes were all mature forms, and there was an apparent increase in the number of platelets on the blood smear. The sedimentation rate was 70 mm. after one hour, and the results of urinalysis were normal. A cephalin flocculation reaction was negative, and the temperature ranged about 103 F. The throat and gums were extremely painful, sore, swollen and tender.

As stated previously, there were only two drugs which the patient had been taking before the present illness; phenobarbital 0.09 Gm. daily, which he had used intermittently for years, and pyrithyldione, which he had been taking for about two to three months in daily doses of 400 to 600 mg. During the two days of observation without medication, his blood count remained about the same, with a complete absence of polymorphonuclear leukocytes. Because of increasing symptoms, it was decided to administer diphenhydramine and penicillin, risking the possible allergic reaction to the latter, since he had had a brisk leukocytosis with his penicillin reaction eight months previously. Accordingly, he was given diphenhydramine hydrochloride, 50 mg. every four hours during the day and every six hours at night, with crystalline penicillin 400,000 units intramuscularly every twelve hours. There was no immediate response, although the oral lesions ceased to increase in severity. On the third day his white blood cell count was 3,250 with 1 per cent polymorphonuclear leukocytes, 87 per cent lymphocytes and 12 per cent monocytes. Two days later the granulocytes increased to 4 per cent, then to 7 per cent that afternoon. By the sixth day the percentage of granulocytes was 16, with 2 per cent myelocytes, and the lesions in the mouth definitely began to recede. At this stage his temperature declined to the normal range, and the patient felt greatly improved. Because of decided agitation and nervousness, administration of phenobarbital was begun in 0.03 Gm. doses every four hours. This did not prevent the reappearance of granulocytes, for in the next forty-eight hours they increased to 31 per cent; two days later they reached normal levels with a total white blood cell count of 10,000. The oral lesions healed completely and the patient was sent home, where subsequent counts were taken and found to be within normal limits.

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[1] Koppanyi, T.; Herwick, R. P.; Linegar, C. R., and Foster, R. H. K. [illegible] of 3,3-Diethyl-2,4-Dioxotetrahydropyridin, and [illegible], Arch. internat. de pharmacodyn. et de thérap. **64:** 123, 1940.

[2] Polatin, P., and Horwitz, W. A.: Clinical Evaluation of New Sedative-Hypnotic (3,3-Diethyl-2,4-Dioxotetrahydropyridine) in Psychiatric Conditions, Psychiatric Quart. **21:** 107, 1947.

CONCLUSIONS

A patient with severe agranulocytosis which presumably resulted from the prolonged ingestion of a new sedative, pyrithyldione (presidon,® 3,3-diethyl-2,4-dioxotetrahydropyridine), is reported. The fact that depression of polymorphonuclear leukocytes has been reported following the administration of this compound to rabbits and man lends support to its role in the causation of the agranulocytosis in this patient. The recovery which took place on discontinuance of the drug, despite combined administration of phenobarbital and penicillin, adds further weight to the interpretation that pyrithyldione was responsible for the agranulocytosis.

FOREIGN BODY IN THE BREAST

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The observation of foreign bodies in the breast is extremely rare. The following case is of particular interest in as much as it offers an unusual problem in the differential diagnosis of tumors of the breast.

REPORT OF CASE

The patient was a housewife aged 38 who had always been in good health with a normal appetite and normal bowel habits. Her menses had been a little irregular for the past eight months. Her husband and three children were living and well. The youngest child was 6 years of age. The patient had nursed the first two children. Her mother died of carcinoma of the breast at 64 years of age, her father of carcinoma of the prostate at 73.

About four weeks before the patient sought medical aid, she felt some discomfort in the right breast and found a lump beneath the nipple. This had not grown in size and was not tender. On careful questioning, she denied any trauma to the breast.

Physical examination revealed a heavy-set woman, 5 feet 8 inches (173 cm.) in height, weighing 216 pounds (98 Kg.). Both breasts were pendulous. Beneath and slightly lateral to the nipple of the right breast, there was a firm nontender mass measuring about 6 cm. in diameter. It was not adherent to the skin or chest wall. The nipple on the affected side was slightly more retracted than that of the opposite side. No discharge was apparent. The skin appeared normal. No masses were palpable either in the axillary or supraclavicular area. The hemoglobin level was 12.6 Gm. per hundred cubic centimeters of blood (81 per cent); the white blood cells numbered 9,050, with 62 per cent polymorphonuclear leukocytes, 37 per cent small monocytes and 1 per cent eosinophils. The temperature was 98.8 F., pulse rate 80 and respiratory rate 20. Roentgenograms of the skull, chest, dorsal spine, ribs and pelvis showed no metastases.

The preoperative diagnosis was carcinoma of the breast. An incision around the lower border of the areola was made for biopsy. The breast manifested grossly the appearance of chronic inflammation rather than cancer. While grasping the incision with a double hook, a "bobby pin" was produced. This was open at an angle of about 150 degrees and showed little evidence of corrosion. The wound was then closed after insertion of a small rubber drain. Biopsy showed only chronic inflammation around a sinus tract. The postoperative course was entirely uneventful.

COMMENT

This case appears to be unique. On reviewing the roentgenogram of the chest, the "bobby pin" could be seen but was thought to be on the clothes. On interrogation, the patient denied all knowledge of how the pin entered the breast. She believed that she must have rolled over on it while she was sleeping soundly.

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RELATION OF RELAPSES IN TYPHOID TO DURATION OF CHLORAMPHENICOL THERAPY

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THEODORE E. WOODWARD, M.D.
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During the past year much information has accumulated on the use of chloramphenicol (chloromycetin®) in the treatment of typhoid. This confirms the original report of Woodward and others,[1] covering the observations on 10 patients, which clearly indicated that the new antibiotic was of great value in this disease. Continued experience reveals that fever disappears by lysis during the first three or four days of treatment.

Our early observations,[1] as well as those of McDermott and his associates,[2] brought out that relapses of typhoid were common in treated patients. In order to eliminate such occurrences, we have prolonged the course of treatment in persons infected with Salmonella typhosa. Analysis of the results obtained in 44 patients with typhoid who received chloramphenicol therapeutically under our observation has indicated a striking relation between the duration of chemotherapy and the incidence of relapses.

Although our observations are being reported in detail elsewhere,[3] it appeared desirable to summarize certain of them at this time in a preliminary note. Following proof of the clinical diagnosis by the cultivation of S. typhosa from the blood, each of the 44 patients received orally an initial loading dose of 3 to 4 Gm. of chloramphenicol, which was followed by 1 to 3 Gm. daily given in divided doses for a variable period of time. A clinical relapse, with reappearance of bacteremia, occurred in 7 of the 13 patients whose initial course of drug was given for 8 days or less, average duration of therapy 6.9 days. None of the members of another group of 19 patients suffered relapses; this group was comparable to the first in essentially all respects, except that treatment was continued for 9 to 14 days, average 11.2. A third group, consisting of 12 patients, was treated for 14 to 23 days, average 18; relapses did not occur among these patients. The day of disease on which treatment was begun in the three groups averaged 13.5, 13.7 and 20.8, respectively. The total dose of chloramphenicol averaged 20.0, 25.7 and 32.8 Gm. for patients in the respective groups. All patients in the first group who had relapses responded satisfactorily when chloramphenicol treatment was again instituted.

CONCLUSION

These results warrant the following conclusions. Chloramphenicol (chloromycetin®) should be administered in adequate amounts for more than eight days to patients acutely ill with typhoid if relapses of the disease are to be avoided. There appears to be little advantage in continuing treatment for more than fourteen days.

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The work on which this report is based was carried on in the General and Military Hospitals and the Institute for Medical Research, Kuala Lumpur, Federation of Malaya, and in the University Hospital, Baltimore.

From the Department of Virus and Rickettsial Diseases, Army Medical Department Research and Graduate School, and Commission on Immunization of the Army Epidemiological Board, Washington, D. C., and the Department of Medicine, University of Maryland, Baltimore.

[1] Woodward, T. E.; Smadel, J. E.; Ley, H. L., Jr.; Green, R., and Mankikar, D. S.: Preliminary Report on the Beneficial Effect of Chloromycetin in the Treatment of Typhoid Fever, Ann. Int. Med. **29**: 131-134, 1948.

[2] Knight, V.; McDermott, W., and Ruiz-Sanchez, F.: Aureomycin and Chloromycetin: Use in Typhus, Typhoid and Brucellosis, presented at the Second National Symposium on Recent Advances in *Antibiotics* Research, Washington, D. C., April 12, 1949, J. Clin. Investigation (supp.), to be published.

[3] Woodward, T. E.; Smadel, J. E., and Ley, H. L., Jr.: Chloramphenicol (Chloromycetin®) in the Treatment of Typhoid: I. General Observations, to be published. Smadel, J. E.; Bailey, C. A., and Lewthwaite, R.: Chloramphenicol (Chloromycetin®) in the Treatment of Typhoid: II. The Efficacy of Synthetic Form of Drug and the Prevention of Relapses by Prolonged Treatment with Either Form of Chloramphenicol, to be published.

EBERTHELLA TYPHOSA INFECTION OF ARTERIOVENOUS ANEURYSM CURED BY EXCISION

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A case of acquired arteriovenous aneurysm infected by Eberthella typhosa, weakened to the point of rupture and cured by surgical intervention is reported because of its interest and rarity. Although this is the fourth case of infected arteriovenous aneurysm reported in the literature as cured by surgical means, it is the only one in which E. typhosa was the infecting organism. The case history, physical observations, pathologic report, treatment and sequelae are reported herewtih.

REPORT OF CASE

History and Preoperative Data.—P. M., a man aged 30, was admitted to Lakeside Hospital by one of us (C. L. H.), on Nov. 14, 1947 for a febrile illness which clinically and with laboratory examination proved to be typhoid. On physical examination, striking but unrelated observations were a loud continuous hum heard on the left over the upper portion of the chest and axilla, a thrill felt in the left subclavicular and axillary areas and a mass about 2 cm. in diameter, palpable in the left axilla. Some of these abnormalities had been discovered at the time of draft board examinations, and subsequent consultations with specialists had left the patient with the impression that he had congenital heart disease. There was no history to substantiate congenital defects of the heart in infancy and childhood; moreover, there were scars anteriorly and posteriorly on the left upper portion of the chest suggesting trauma. Direct questioning revealed a history of gunshot wound some ten years' previously, followed by transient anesthesia and motor paralysis of the left arm. The patient was told by us that he had an arteriovenous communication between the axillary artery and vein as a result of the wound. He was advised to have surgical consultation with the view of repair as soon as his convalescence from typhoid permitted. Toward the end of his hospital stay, the patient experienced pain in the left arm for a few hours. On the disappearance of this pain he was permitted to go home Dec. 11, 1947.

The patient was readmitted to Lakeside Hospital one week later because of recurrence of pain in the left arm, fever, and swelling and increased heat and redness of the left arm and left subclavicular and pectoral regions. On readmission, the temperature was 38.4 C., the pulse rate 104 and the respiratory rate 20. Blood pressure in the left arm was 104 systolic and 65 diastolic; in the right, 130 systolic and 65 diastolic. The left biceps reflex was absent. There was hypesthesia of the skin of the forearm in the distribution of the medial antebrachial cutaneous nerve. Inspection of the arm and shoulder was as previously noted. There was weakness of motor power. The white blood cell count, which had been normal during the course of the typhoid, was now 20,700 per cubic millimeter with a differential count of 76 per cent polymorphonuclear neutrophils, 17 per cent lymphocytes, 6 per cent mononuclear cells and 1 per cent basophils.

The diagnosis clinically was infected arteriovenous aneurysm developing at the site of the traumatic arteriovenous communication, but the nature of the infecting organism was obscure because blood cultures were sterile and because we had no knowledge of other cases of similar infection with E. typhosa. Because of this uncertainty, a trial with penicillin and with streptomycin and sulfadiazine in conjunction was made but without beneficial effect. On the third hospital day Dr. Claude S. Beck inserted a needle into the mass in the axilla with the aim of evacuating a possible abscess. He aspirated pure blood, which on culture grew E. typhosa. The swelling and pain in the arm and shoulder increased, and the previously described murmur and thrill disappeared. No pulse could be palpated in the arm, which was virtually motionless.

Operative Intervention.—On the eighth hospital day, December 26, operation was performed by Dr. C. S. Beck with the patient under nitrous oxide, oxygen and ether anesthesia. The incision was made from the clavicle to several inches below the shoulder on the arm. The middle third of the left clavicle was resected subperiosteally. A tape was passed under the subclavian artery for emergency use. Next, the pectoralis muscle was split and the false sac of the aneurysm was revealed. It extended up over the deltoid and well under the pectoralis muscles. While the brachial artery was being dissected out, the false sac of the aneurysm, which contained about 300 cc. of old blood clot, ruptured. At this point the true aneurysm ruptured, and bleeding was controlled by occluding the subclavian artery above. The necrotic tissue and infected blood in and around the false sac were sucked out, the axillary artery and vein were ligated proximally and distally to the aneurysm, and the true sac was excised after all feeder vessels were tied off. A large nerve trunk of the brachial plexus was inextricably involved in the calcified wall of the aneurysm. Because of the presence of infection, drains were placed and the pectoralis muscle and skin were approximated with sutures. Three thousand cubic centimeters of whole blood were given intravenously during the operation.

Postoperative Course.—The elevation in temperature and pain in and edema of the arm disappeared almost immediately after operation. Moderately large amounts of turbid serosanguineous fluid drained out of the wound, and cultures of this material yielded E. typhosa until the wound closed on the twenty-second postoperative day. On the twelfth postoperative day a pulmonary infarct developed; the patient was given heparin and dicumarol® and responded well. After operation the arm remained warm but was somewhat cyanotic. There was an immediate but gradual increase in return of sensory perception, but the return of motor power from a point of complete absence was slower. Physical therapy was given three times a week after the closure of the wound.

The arm can now be abducted and rotated at the shoulder and flexed and extended at the elbow and wrist. There is little deviation of the hand. The hand is flat in the palm because of wasting of the thenar and hypothenar muscles, and there is an attitude of slight extension of the proximal phalanges with slight flexion of the distal phalanges. Opponation of the thumb is still absent, and supination of the hand is limited. Tendon transplants in the hand are now being done.

Pathologic Report.—In addition to fragments of blood clot "also received are four irregular fragments of previously opened blood vessel wall, the largest of which measures 5.5 by 5 by 0.3 cm. and the smallest 4.5 by 2 by 0.3 cm. The cut edges of the largest fragment of vessel wall can be arranged to form a sac which is roughly spherical. This sac is 2.5 cm. in diameter with two openings in either pole, the larger measuring 1 cm. in diameter and the other 0.8 cm. in diameter. . . ."

Microscopic Description.—"The wall of the aneurysm consists of dense fibrous connective tissue. . . . In one section there are distinct clumps of bacteria on and between connective tissue fibers adjacent to the lumen of the aneurysm. These proved to be gram-negative bacilli. . . . There is focal calcification of the wall."

Dr. Howard T. Karsner reviewed the slides and submitted the following diagnosis: Mycotic infection of the wall of an arteriovenous aneurysm.

COMMENT

An arteriovenous aneurysm caused by a gunshot wound in the region of the left axilla was discovered in a patient having typhoid. At the end of the course of the typhoid, pain in the left arm, tenderness of the aneurysm palpated in the axilla, swelling and increased heat of the subclavicular and subpectoral regions and of the arm, decreased blood pressure, hypesthesia and paralysis in the arm, fever and leukocytosis suggested that the aneurysm had become infected and altered in size or condition. The region was aspirated and later incised, and an aneurysm at the site of the old traumatic arteriovenous communication was excised together with a section of the axillary artery and parts of the brachial nerve plexus which were inextricably involved. A false sac containing 300 cc. of old blood was removed. Necrotic and infected blood and tissue were

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From the Departments of Medicine and Surgery, University Hospitals.

drained from the surrounding area, which extended from the subclavicular region down the left arm to the elbow.

There seems to be no doubt that the infecting organism was E. typhosa. The patient had just had typhoid, and E. typhosa was cultured from the lesion and from the postoperative drainage material on numerous occasions. Gram-negative bacilli were demonstrated in the connective tissue of the wall of the aneurysm.

SUMMARY

Three instances[1] of excision of infected arteriovenous aneurysms have been reported with cure. All 3 involved streptococcic septicemia with the periodic discharge of organisms into the blood stream to produce a chronic illness.

Our case, the fourth to be reported, differs in its emergent nature and in that the infecting organism was E. typhosa and as such was unique. Stengel and Wolferth[2] in 1923 concluded that in 4 cases of mycotic aneurysm reported prior to that time as being due to E. typhosa, typhoid was not proved. We have not found reference to such cases in the more recent literature.

Surgical excision of the aneurysm and drainage of the surrounding area gave prompt relief and ultimate cure after antibiotic therapy had shown no effect.

The rarity of this case is not the sole reason for its being reported. It seems justifiable to point out the very real threat of this arteriovenous fistula to this patient's life. Although the effects of these fistulas on the mechanics of the cardiovascular system are well known and often constitute an indication for surgical intervention, the need for their repair to avoid infection is less commonly appreciated.

2102 Abington Road.

THE TREATMENT OF ACUTE TYPHOID FEVER WITH CHLOROMYCETIN®

WILMOT D. FOSTER, M.D.
and
ROBERT J. CONDON, M.D.
Portland, Ore.

The antibiotic chloramphenicol (chloromycetin®) was first tested clinically against typhoid in the Federation of Malaya last year. The efficacy of the drug against the organism Eberthella typhosa was established by this investigation.[1] Chloramphenicol is a crystalline substance obtained through the processes of concentration and purification of cultures in liquid mediums of a species of Streptomyces originally isolated by Burkholder and shown by him to possess antibacterial activity.[2] Ehrlich and his associates in the research laboratories of Parke, Davis & Company carried out the studies of the antibiotic activity of this species of Streptomyces which led to the preparation of a compound which was given the name chloromycetin.

The purpose of this report is to further substantiate the observations of Woodward and co-workers.[1] The aforementioned investigation was carried out in an endemic typhoid area; this case may be designated as sporadic. It is by nature comparable, however, to an experimental or laboratory infection, because the patient ingested the typhoid organism in his college bacteriologic laboratory, the culture originally having been obtained from a stool culture of a typhoid carrier. Thus it was possible to determine the exact day and hour of the ingestion of the organism and the onset of symptoms. This aspect of the case coupled with the dramatic response of the organism (proved by blood culture) to chloromycetin makes it interesting and timely.

REPORT OF CASE

History.—Mr. M. L. R., a college student aged 20, entered the hospital on March 22, 1949 because of frequent episodes of chills and fever which had not proved amenable to home care.

The history disclosed that seven days before admission the patient had first noticed fever, headache and loss of appetite, associated with weakness and a feeling of malaise. He consulted the college physician, who found nothing of significance on examination and who prescribed acetylsalicylic acid in tablet form. The onset of severe chills and intermittent fever prompted the youth to consult his family physician, who gave him injections of penicillin on three successive days without amelioration of symptoms. When a burning urination with pain in the flanks and loins developed, the patient was again carefully interrogated and thoroughly examined.

Manner of Infection.—It was then discovered that on March 4 the patient had accidentally pipetted into his mouth supposedly attenuated typhoid organisms in the college bacteriologic laboratory. To his knowledge none had been swallowed, and his mouth had immediately been washed with a popular antiseptic solution. The class instructor had assured him the organisms were "safe to handle and were all dead." His fears allayed, the student had forgotten the incident and had neglected immunization procedures or prophylactic therapy. On obtaining this history it was deemed wise to admit the patient to the hospital immediately with a tentative diagnosis of typhoid.

Past Medical History.—Recurrent episodes of aural infections had been complicated with mastoiditis on one occasion. No history of rheumatic fever, scarlet fever, diphtheria or of other complicated childhood disease was obtained. There was no history of valvular heart disease.

Systemic review revealed only an elaboration of the present illness. Careful interrogation disclosed that there had been no rash during the present illness. A family and social history revealed nothing contributory.

Physical Examination.—The patient was a husky, well developed, muscular white man in apparent distress. He was cooperative and alert but mildly depressed; the skin was flushed, warm, dry and unblemished by rash. The temperature was 104.5 F., the pulse rate was 84 per minute and the blood pressure was 120 systolic and 70 diastolic. The pharynx was mildly injected, and except for the relative bradycardia no other abnormalities were discovered.

Laboratory Data.—Pertinent laboratory work was immediately started; cultures of the urine, stools and blood, routine counts and urinalysis, routine agglutinations, a roentgenogram of the chest and electrocardiogram were ordered. Nursing care emphasized frequent sponge bathing and other antipyretic measures, none of which served to lower the fever appreciably. The temperature ranged between 101 and 105.4 F. with frequent racking chills and a profuse sweat. Fluids and electrolytes were administered as required orally and by vein.

The morning of March 23 revealed a decidedly dicrotic pulse and a pronounced bradycardia. Examination of the blood revealed that the hemoglobin level was 98 per cent, the red cell count 4,670,000 and the leukocyte count 7,300, with a differential count of 50 per cent polymorphonuclear leukocytes, 1 per cent basophils, 26 per cent lymphocytes, 5 per cent monocytes and 10 per cent staff cells. The sedimentation rate (Westergren) was 10 mm. in forty-five minutes. The urine was acid, with specific gravity of 1.017, 2 plus reaction for albumin, no reducible sugar and an occasional hyaline cast. The serologic tests and malarial smears were negative. Agglutination tests revealed a 1:80 titer for E. typhosa, 1:20 for paratyphi A and a 1:10 for paratyphi B. Cultures of the urine and stools did not yield the organisms.

Treatment and Course.—Streptomycin: The spleen became palpable during March 23, and on March 24 it was distinctly palpable 3 cm. below the left costal margin. When on March 25 cultures of the blood revealed a gram-negative rod, the patient was started on streptomycin therapy, 2 Gm. per day in divided doses. During the day an uncontrollable diarrhea of liquid green stools commenced.

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[1] Hamman, L., and Reinhoff, W. D. Jr.: Subacute Streptococcus Septicemia Cured by Excision of Arteriovenous Fistula, Tr. A. Am. Physicians **50:** 228, 1935. Tourhoff, A. S.; Lande, H., and Kroop, I.: Subacute Streptococcus Viridans Septicemia Cured by Excision of an Infected Arteriovenous Aneurysm, Surg., Gynec. & Obst. **74:**974, 1942. Lipton, S., and Miller, H.: Streptococcus Viridans Septicemia: Subacute Bacterial Endarteritis of an Arteriovenous Aneursym, J. A. M. A. **126:** 766 (Nov. 18) 1944.

[2] Stengel, A., and Wolferth, C. C.: Mycotic (Bacterial) Aneurysms of Intravascular Origin, Arch. Int. Med. **31:**527 (April) 1923.

From the Department of Medicine, St. Vincent Hospital, Portland, Oregon.

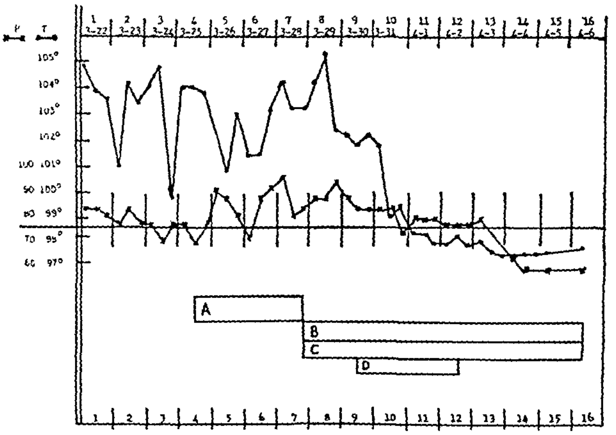
The chloromycetin® used in this case was supplied by Parke, Davis & Company.

[1] Woodward, T. E.; Smadel, J. E.; Ley, H. L., Jr.; Green, R., and Mankikar, D. S.: Beneficial Effect of Chloromycetin in the Treatment of Typhoid Fever, Ann. Int. Med. **29:** 131, 1948.

[2] Ehrlich, J.; Bartz, Q. R.; Smith, R. M.; Joslyn, D. A., and Burkholder, P. R.: Chloromycetin: A New Antibiotic from a Soil Actinomycete, Science **106:** 417, 1947.

Streptomycin had no appreciable effect on the disease or the diarrhea. Gradually the bradycardia became more pronounced, as did the dicrotism of the pulse. Heart sounds were somewhat blurred and indistinct. The blood pressure remained stabilized, but the patient lapsed slowly into a stupor and gradually became disoriented and mildly delirious. A transfusion of whole blood on March 26 had no effect on the clinical course.

Chloromycetin: The laboratory reported on March 28 that the organism recovered from the blood was positively identified as E. typhosa. That day a supply of chloromycetin was obtained by air-express. Streptomycin therapy was stopped and the administration of chloromycetin was started immediately, the initial dosage being 3.5 Gm. orally (50 mg. per kilogram of *body weight) and a maintenance dose of 0.25 Gm. every two* hours. Stupor, fever and carphologia were pronounced the first day of administration and over the subsequent twenty-four hours. Complete orientation and consciousness first returned on March 29. On March 30 the temperature fell abruptly to 102 F. and remained at that level for twenty-four hours. On that day also the diarrhea became controllable and diminished in quantity. Because the patient was bleeding from the nose and because the prothrombin time was low (54 per cent of normal concentration), vitamin K (5 mg. a day) and equal parts of sulfadiazine, sulfathiazole and sulfamerazine (combisul®, 0.5 Gm. four times a day) were given to ward off possible gastrointestinal complications. On March 31 the temperature returned to normal and remained there for the duration of the hospital stay.



Effect of treatment with (*A*) streptomycin, (*B*) chloromycetin, (*C*) combisul® and (*D*) penicillin on the clinical course of a patient with typhoid.

However, sonorous and sibilant rales developed in the anterior portion of the left lung; penicillin (50,000 units every three hours) was then administered to abort if possible a complicating pneumonia. These rales rapidly disappeared, and penicillin therapy was stopped on April 2. On this date the persistent and troublesome diarrhea also ceased, and the dosage of chloromycetin was changed to 0.25 Gm. every four hours. The medicament was continued at this rate until April 5, when all treatment was discontinued, the patient having meanwhile become ambulatory. On the next day 3 stool cultures taken during the previous week failed to exhibit growth of typhoid organisms and a negative culture of the duodenal contents was obtained; the patient was then discharged. Agglutination tests on the day of discharge revealed a titer of 1:320 for the O antigen and 1:80 for the H antigen of E. typhosa.

The patient returned to his college studies on April 11 and has remained well to the present.

COMMENT AND CONCLUSION

The course of the disease was uninfluenced by four days of streptomycin therapy, but a complete remission of the fever took place ninety-six hours after the administration of chloromycetin. Two of the 10 patients in the series of Woodward and others[1] relapsed (after 10 and 16 days, respectively) with a bacteremia which reoccurred after an afebrile period. The possibility of a relapse thus was contemplated in this case. However, although the same dosage schedule was used as in the original series,[1] there was no evidence of relapse. It is interesting to note that in the 2 aforementioned relapses, the organisms did not manifest increased sensitivity to the drug in vitro and the recurrent infections responded promptly to a new course of the drug. Tests to determine levels of the antibiotic in the blood or sensitiveness of the organism to the agent were not performed in this case.

It would appear from this case report that chloromycetin® is highly effective in the treatment of typhoid.

AGRANULOCYTOSIS FOLLOWING THE USE OF PYRITHYLDIONE (PRESIDON®)

Results of Diagnostic Test

MORTIMER E. EHRLICH, M.D.
and
LEON N. SUSSMAN, M.D.
New York

Pyrithyldione (presidon,® or 3,3-diethyl-2,4-dioxotetrahydropyridine) has been widely used since its introduction as a sedative and hypnotic. Its advantages in not being a barbiturate are obvious. The apparent failure to produce any toxic manifestations on the central nervous system, cardiovascular systems, or hemopoietic systems made its use more desirable. Herewith is the first reported case of agranulocytosis resulting from its use. The relation between the administration of the drug and the depressing effect on the granulocytic series is proved by observation of the patient while receiving test doses of the drug.

REPORT OF CASE

M. L., a woman aged 49, works as a promotion executive. Her past history includes a hysterectomy at 36 years of age and an exceedingly labile blood pressure, which responded to emotional strain and overwork by extreme fluctuation. There was no history of allergic diseases. In May 1947 a thorough examination revealed that her heart was normal clinically as well as by roentgenologic and electrocardiographic study. Other laboratory examinations including erythrocyte sedimentation rate, basal metabolic rate, phenolsulfonphthalein excretion, blood sugar, nonprotein nitrogen and cholesterol were within normal limits. The urine was normal, with specific gravity of 1.027. Blood studies revealed 6,500 leukocytes, 55 per cent of which were polymorphonuclear cells. The patient complained of dizziness, fatigue, headache and insomnia which had persisted for several months. Various barbiturates were prescribed. These were found to be mentally depressing. On Feb. 25, 1949 pyrithyldione, 100 mg. three time a day, was prescribed and found to be helpful; it did not cause mental depression or "hangover." The drug was taken irregularly until March 21, when severe *pyelitis developed. This responded promptly to* penicillin therapy. After this incident greater medical control was instituted, and 100 mg. of pyrithyldione was administered regularly three times a day. After approximately one month (April 29) the patient complained of sore throat, headache, and "stuffed" ears. Two days later her pharyngitis became much severer, and a temperature of 103 F. was noted. There were several postauricular and postcervical lymph nodes which were tender and painful. The nasopharynx was severely injected. Crystalline procaine penicillin G in oil (300,000 units) was injected daily for three days, resulting in a fall in temperature to 100 F., with some resolution of the lymph nodes. Two days later, however, there occurred a pronounced increase in all symptoms and a sudden elevation of the temperature to 103 F. A blood count taken at this time showed a hemoglobin level of 100 per cent, with 4,260,000 erythrocytes per cubic

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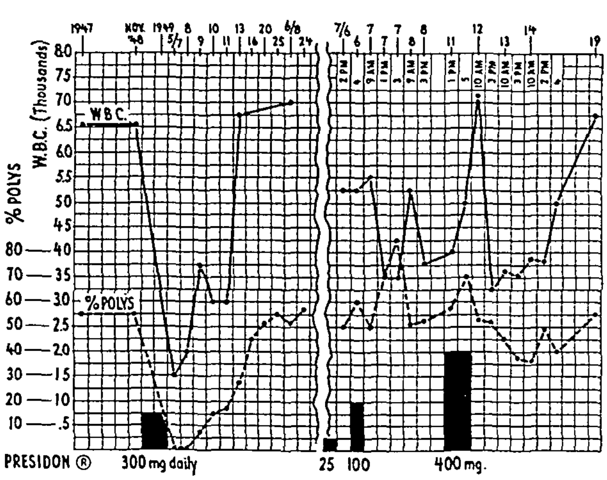
From medical service and laboratories of Beth Israel Hospital.

millimeter. The total leukocyte count was 1,500, of which 99 per cent were lymphocytes and 1 per cent monocytes. The patient was promptly hospitalized. Pyrithyldione was suspected as the cause of the agranulocytosis. Sternal marrow aspiration performed at this time revealed an extremely active marrow with intense myelocytic proliferation. No mature polymorphonuclear cells were seen. Other cellular elements were present in normal distribution, except for a slight increase in plasma cells. The differential count on the sternal marrow was as follows: myeloblasts 2.5 per cent, promyelocytes 4 per cent, myelocytes 35 per cent, metamyelocytes 5 per cent, lymphocytes 9.5 per cent, plasma cells 5 per cent, normoblasts 39 per cent and no segmented forms. Massive doses of penicillin were given to the patient, who gradually recovered both clinically and hematologically (chart). During the period of hospitalization the patient noted a loss of hair and loosening of the teeth. Her convalescence continued slowly, and she was discharged twenty days after admission. The patient consented to a diagnostic test with pyrithyldione and was readmitted on July 6. Examination of the blood on admission revealed 5,200 leukocytes, of which 58 per cent were polymorphonuclear cells. Gradual doses of the drug were administered, and blood counts were taken at two hour intervals (see chart). *On July 6, 25 mg. of pyrithyldione was given.* No effect was noted, and the following day 100 mg. of the drug was administered. Within four hours a fall in the leukocyte count to 3,500 with a rise in the percentage of polymorphonuclear cells from 50 to 84 per cent was noted. After a five day rest period, during which the daily examination of the blood revealed a normal count, two doses of pyrithyldione of 200 mg. each were given. Headache, lassitude, malaise and rise in temperature to 101 F. appeared rapidly followed the next day by a fall in the total leukocyte count to 3,350 and a drop in polymorphonuclear cells to 39 per cent. This persisted for three days; then a gradual rise in the leukocyte count occurred, and all symptoms disappeared. When the white blood cell count had reached normal and the patient was clinically asymptomatic, she was discharged to the care of her physician.



Influence of pyrithyldione (presidon®) on the cellular elements of the blood.

SUMMARY

This case illustrates the depressing action of pyrithyldione (presidon®) on the hemopoietic system and establishes the relation between neutropenia and the administration of the drug. In addition, the occurrence of other toxic effects and complications, such as alopecia and loosening of the teeth, were demonstrated by this patient. The cooperation of the patient and the manufacturer (Hoffmann-LaRoche, Inc.) made these observations possible.

36 East Thirty-Eighth Street.

Council on Pharmacy and Chemistry

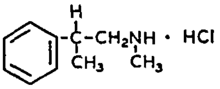
NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary*.

PHENYLPROPYLMETHYLAMINE HYDROCHLORIDE.—Vonedrine Hydrochloride (Merrell).—*d,l*-1-Methylamino-2-phenylpropane hydrochloride.—$C_{10}H_{15}N \cdot HCl$.—M.W. 185.70.—Phenylpropylmethylamine hydrochloride is made by adding phenylpropylmethylamine to an aqueous solution of hydrochloric acid and is not available in the dry state.

The structural formula of phenylpropylmethylamine hydrochloride may be represented as follows:



Actions and Uses.—Phenylpropylmethylamine hydrochloride, like the volatile base, acts chiefly as a local vasoconstrictor. It is useful in the form of an isotonic solution for topical application to produce shrinking of the nasal mucosa. Its local effects are accompanied with minimal irritation, local tissue reaction or secondary congestion and little or no stimulation of the cardiovascular or central nervous systems. Although relatively nontoxic, ordinary precautions should be observed as for other sympathomimetic agents to avoid the possible untoward effects of overdosage.

Dosage.—Phenylpropylmethylamine hydrochloride is usually applied locally in a concentration of 2.8 per cent, either as drops into the nose, as a nasal spray, nasal tampons, or by displacement followed by suction. Five to 10 drops in each nostril every three hours is usually sufficient to provide symptomatic relief of simple nasal congestion.

Phenylpropylmethylamine hydrochloride is incompatible with silver salts, tannates and picrates.

Tests and Standards.—

Phenylpropylmethylamine hydrochloride solution is clear, colorless and nearly odorless. It has a *p*H of 5.5 to 6.5.

Transfer about 10 ml. of phenylpropylmethylamine hydrochloride solution to a separatory funnel, saturate it with sodium chloride and add 15 ml. of 1 *N* sodium hydroxide. Extract the liberated base with 40, 30 and 30 ml. portions of ether. Wash the combined ether extracts with 10 ml. of water and dry the ether layer for 1 hour over about 10 Gm. of anhydrous sodium sulfate. Filter and evaporate the ether. Take up the remaining liquid in 15 ml. of benzene. If water is still present, add more anhydrous sodium sulfate and decant the benzene onto a filter paper containing anhydrous sodium sulfate. Collect the filtrate in a 25 ml. Erlenmeyer flask. Bubble an excess of dry hydrogen chloride gas through the solution and remove the excess gas by heating on a steam bath. Cool the flask to allow the hydrochloride to separate. Filter and wash the crystals first with dry benzene and then with dry ether, and air-dry with suction. The fine, white crystals are soluble in alcohol, ether and water, and in hot benzene; the compound melts between 147 and 150° C.

Transfer exactly 3 ml. of phenylpropylmethylamine hydrochloride solution to a separatory funnel, dilute with 10 ml. of water, saturate the solution with sodium chloride and add 5 ml. of 1 *N* sodium hydroxide. Extract the liberated base with 40, 30 and 30 ml. portions of ether. Wash the combined ether extracts with 5 ml. of distilled water. Extract the ether solution with exactly 35 ml. of 0.02 *N* sulfuric acid. Wash the ether layer with 10 and 5 ml. portions of distilled water, add the water extracts to the sulfuric acid solution and heat the combined extracts on a steam bath to remove ether. Cool, add 2 drops of methyl red T. S. and titrate the excess sulfuric acid with 0.02 *N* sodium hydroxide. Each ml. of 0.02 *N* sulfuric acid consumed is equivalent to 0.00371 Gm. of phenylpropylmethylamine: the amount of phenylpropylmethylamine hydrochloride is not less than 93.0 or more than 107.0 per cent of the claimed amount.

Cetyl Pyridinium Chloride: The cetyl pyridinium chloride in phenylpropylmethylamine hydrochloride solution conforms to the N. N. R. standards for this substance.

Phenylpropylmethylamine: The phenylpropylmethylamine used in making phenylpropylmethylamine hydrochloride solution conforms to N. N. R. standards for this substance.

The Wm. S. Merrell Company, Cincinnati

Solution Vonedrine Hydrochloride, 2.8%:30 cc. dropper bottles and 473 cc. bottles. Each 100 cc. contains 2.8 Gm. phenylpropylmethylamine hydrochloride, 0.02 Gm. of cetylpyri- [illegible] n. chlorobutanol and aromatic oils in [illegible] lution is isotonic, with a *p*H between 5.5 and 6.5.

U. S. trademark 406,970.

PLANTAGO OVATA CONCENTRATE.—Konsyl (Burton, Parsons & Co.)—A preparation consisting principally of the separated outer mucilaginous layers of Plantago ovata seeds (blond psyllium).

Actions and Uses.—Plantago ovata concentrate may be used in cases of simple constipation due to lack of sufficient bulk in the stool. It produces no cathartic action and is, therefore, mainly useful as an aid in chronic constipation, of functional or neurogenic origin.

Dosage.—5 Gm. to 10 Gm. in a glass of water or milk, three times daily, usually before meals, is considered sufficient to promote evacuation of the bowel in most cases. It is important to drink the mixture before it thickens.

Tests and Standards.—

Plantago ovata concentrate is a cream-colored to brown, granular powder, practically odorless and tasteless. Stir 10 Gm. of the powder rapidly into 250 ml. of water: a mucilaginous suspension, containing numerous dark brown discrete particles, is formed. As the hydration and swelling of the mucilaginous portion progresses, the mixture assumes a soft gelatinous consistency.

Transfer 30 Gm. of Plantago ovata concentrate to a suitable flask and determine the moisture content by means of the method for moisture by toluene distillation described in U. S. P. XIII, page 712: the moisture content is not more than 10 per cent.

Add 100 ml. of water to a 100 ml. stoppered graduated cylinder. To the surface of the water, add gradually 1 Gm. of Plantago ovata concentrate, adding the solid sufficiently slowly to prevent the formation of a large clump of wetted solid at the top of the graduate. Stopper the cylinder, shake well, let it stand for 15 minutes and shake again. After 4 hours of standing, the mucilaginous layer at the bottom of the cylinder is more than 30 ml. in volume.

Burton Parsons & Co., Washington 9, D. C.

Konsyl (Powder): 180 Gm. and 360 Gm. cans.

U. S. patent 1,975,731; U. S. trademark 313,620.

Council on Physical Medicine and Rehabilitation

REPORTS OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

Howard A. Carter, *Secretary.*

KOROMEX DIAPHRAGM ACCEPTABLE

Manufacturer: Holland-Rantos Company, Inc., 145 Hudson Street, New York (13).

The Koromex Diaphragm is a contraceptive device consisting of a dome-shaped rubber diaphragm manufactured from natural rubber latex over a cadmium-plated coiled steel spring. The device is available in a series of different sizes, which are specified in terms of external diameter. This diameter ranges from 50 to 105 mm. in gradations of 5 mm. The thickness of the rim is 4.7 mm.

Koromex Diaphragm

In use, the Koromex Diaphragm is guaranteed for two years, and the date of manufacture is stamped on the package. The firm supplied evidence that the shelf-life of the device is at least three years.

The device is used when control of conception is indicated. It is to be used in conjunction with Koromex Jelly or Cream, which have been accepted by the Council on Pharmacy and Chemistry. The firm supplied evidence that the use-life of the device under these conditions is at least two years. Exposure to heat or light or to products containing petrolatum injure the rubber and shorten the use-life. Satisfactory evidence was obtained that the Koromex Diaphragm conformed to the published list of Requirements for Acceptability of Contraceptive Devices.

The Council on Physical Medicine and Rehabilitation voted to include the Koromex Diaphragm in its list of accepted devices.

UNEX MIDGET HEARING AID, MODEL 110, ACCEPTABLE

Manufacturer: Nichols & Clark, Hathorne, Mass.

The Unex Midget Hearing Aid, Model 110, contains microphone, amplifier and batteries in a single metal case. The case measures 17 by 92 by 59 mm. (1 11/16 by 3⅝ by 2 5/16 inches). The weights of the various parts are as follows: two batteries, 62 Gm.; receiver and cord, 12 Gm.; case containing amplifier, 64 Gm.; total, 138 Gm. (9 ounces).

Unex Midget Hearing Aid Model 110

The electrical and acoustic data presented by the firm to substantiate the electrical and acoustic performance of the instrument were confirmed by the Council investigator. The voltage of the "A" battery is 1.5; the "A" current is 54 milliamperes. The "B" current is 0.76 milliamperes for 22 volts and 0.40 for 16 volts.

Two subjects, both veteran users of hearing aids, participated in performance tests of these instruments. Discrimination tests with the same 2 subjects were conducted, using phonetically balanced list of 100 monosyllables (recorded version) delivered at 60 decibels and reaching the listeners at 41 and 33 decibels, respectively, above their thresholds for test no. 9. The score for Model 110 is as follows:

	Amplification Without Hearing Aid	Reference Instrument	Model 110	Difference
Subject A	92	85	87	+2
Subject B	94	76	78	+2
		Average		+2

The discrimination provided by Unex 110 is not significantly different from that of the reference instrument. The results of the performance tests are obviously satisfactory.

The Council on Physical Medicine and Rehabilitation voted to include the Unex Midget Hearing Aid Model 110 in its list of accepted devices.

UNEX MIDGET HEARING AID, MODEL 95, ACCEPTABLE

Manufacturer: Nichols & Clark, Hathorne, Mass.

The Unex Midget Hearing Aid, Model 95, contains microphone, amplifier and batteries in a single metal case. It measures 17 by 60 by 92 mm. (11/16 by 2⅜ by 3⅝ inches). The weights of the various parts are as follows: two batteries 63 Gm.; receiver and cord, 7 Gm.; case containing amplifier, 62 Gm.; total, 132 Gm. (8½ ounces).

Unex Model 95 is provided with a crystal receiver and has no provision for a magnetic receiver.

Electroacoustic Data.—The data provided by the manufacturer indicate an acoustic gain for Model 95 in the octave from 500 to 1,000 cycles per second. The "A" current is given as 33 milliamperes when the "A" voltage is 1.0, and 41.5 milliamperes for "A" voltage 1.5. "B" current is given as 0.44 milliamperes for 22 volts and 0.20 milliamperes for 16 volts.

Discrimination tests for 2 subjects were performed at levels 35 and 34 decibels, respectively. The performance is better than that of the reference instrument by a margin that is probably significant.

	Amplification Without Hearing Aid	Reference Instrument	Model 95	Difference
Subject A	92	85	90	+5
Subject B	94	76	82	+6
		Average		+5.5

The Council on Physical Medicine and Rehabilitation voted to include the Unex Midget Hearing Aid, Model 95, in its list of accepted devices.

Committee on Cosmetics

The following products have been accepted as conforming to the rules of the Committee on Cosmetics of the American Medical Association. A copy of the rules on which the Committee bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

Pepsodent Division, Lever Brothers Company

Rayve Creme Waving Lotion.—An aqueous solution of sodium and ammonium thioglycolate containing specified quantities of sodium hydroxide and ammonia. This permits a "cold" wave permanent; its action does not depend on chemically or electrically produced heat. It is particularly adaptable to use in the home if directions are followed carefully.

Rayve Neutralizer.—A pink powder composed of potassium bromate to be used in an aqueous solution following the application of the waving lotion, to neutralize the thioglycolate solution and to fix the wave.

Creme Waving Lotion, 3.75 fluidounces.
Neutralizer, 0.55 ounces.

Marcelle Cosmetics, Incorporated

Marcelle Hypo-Allergenic Cosmetics.—These products are formulated to minimize the possibility of allergic reaction to ingredients. They are scented and unscented.

Face Powder.—Finely powdered, nongritty mineral ingredients with added color and synthetic perfume. It is used to subdue gloss or shine of the skin and conceal minor skin blemishes and imperfections.

Box, 2¾ ounces

Dusting Powder and Talcum Powder.—Finely pulverized, white, nongritty mineral materials to impart a smooth, absorbent, lightly scented film on the body.

Box, Dusting Powder, 4 ounces; Talcum Powder, 7 ounces.

Cleansing Cold Cream.—A white, creamy, semisolid, emulsion of the beeswax, borax and liquid petrolatum type, to provide emollient and cleansing properties for dry and normal skins.

Jar, 4, 8 and 14 ounces

Liquefying Cream.—A white, anhydrous material consisting of petrolatum, liquid petrolatum and waxes which melts on contact with the skin. It is used as a cleanser for the oily type of skin.

Jar, 4, 8 and 14 ounces.

Skin Lubricating Cream.—A faintly pink, anhydrous cream consisting of fats and oils chemically similar to normal skin oils in a petrolatum-liquid petrolatum base. It is used for its emollient effect on dry and normal skins.

Jar, 4, 8 and 14 ounces.

Special Foundation Cream for Dry Skin.—A faintly pink, soft, creamy emulsion containing pigments to impart to the dry skin a thin emollient film to which powder will readily adhere.

Jar, 4 and 8 ounces.

Special Foundation Cream for Oily Skin and Vanishing Cream.—A white, pearly, soft, emulsified cream consisting of a stearic acid soap, free stearic acid, water and glycerin. The high water content results in fairly rapid evaporation accompanied with an apparent "vanishing" of the cream. The soap content plus the flexible film of stearic acid remaining on the skin is intended to be effective in increasing the adherence of face powder, especially in the presence of an oily skin.

Jar, 4 and 8 ounces.

Hand Cream.—A pink, moderately soft emulsion containing glycerin, emollient ingredients and water to provide protection for the hands and to give a softer appearance through its emollient action.

Jar, 4 and 8 ounces.

Special Skin Lotion.—A thick white oil-in-water emulsion containing oils and fats in the dispersed phase and glycols in the aqueous phase. It is used to protect and soften the skin.

Bottle, 4 and 8 ounces.

Astringent.—An amber-colored liquid with alcohol as the basic ingredient, with astringent action and solvent activity toward oils. It is used to impart a cool feeling to the skin and to aid in cleansing where there is excessive oiliness.

Bottle, 4 and 8 ounces.

Mild Astringent.—A watery white liquid containing a relatively smaller amount of alcohol and an astringent aluminum salt. It is used for dry skin types and as an after-shaving lotion.

Bottle, 4 and 8 ounces.

Foundation Lotion for Dry and Normal Skin.—A suspension of finely pulverized inert pigments in an emollient oily liquid vehicle. It is used as a powder base to camouflage blemishes and to impart a velvety appearance and even color to the normal or dry skin. It also can be used as a pigmented vehicle for the incorporation of medicaments.

Bottle, 1 ounce.

Foundation Lotion for Oily Skin.—A suspension of finely pulverized inert pigments and other materials in a water-alcohol medium. Fats, oils and waxes are omitted. It is used as makeup for oily skin.

Bottle, 2 ounces.

Lipstick.—A waxy solid of moderately high melting point with a halogen derivative of fluorescein. It is used to enhance the appearance of the lips by added indelible color and to protect against dryness through its emollient properties.

Special Formula no. 372 Lipstick.—This is the same as Marcelle lipstick except that halogen derivatives of fluorescein dyes are omitted. It is a nonindelible lipstick for persons who are sensitive to these dyes.

Lip and Facial Rouge.—This is the same as Marcelle lipstick except softer and creamier in consistency to permit smooth blending on the cheeks.

Special Blend no. 372 Lip and Facial Rouge.—This is the same as lip and facial rouge except that halogen derivatives of fluorescein are omitted.

Dry Rouge.—An intensely colored mixture of mineral ingredients to enhance the color of the cheeks.

Eye Shadow.—A soft waxy material with pigments and color lakes to adjust to various shades. It is used as makeup to enhance the natural shadows at the inner corner of the eyes and accentuate the eyes.

Skin Lubricating Oil.—A faintly pink, anhydrous oily liquid to lubricate the skin.

Bottle, 2 ounces.

Soap.—A white, hard-milled soap essentially composed of tallow to form a bland neutral complexion soap.

Shampoo.—A greenish, opalescent liquid of potassium soaps of vegetable oils.

Bottle, 4 and 8 ounces.

Deodorant.—A white, creamy emulsion containing an aluminum salt to inhibit perspiration in the axillas through an astringent action.

Jar, 1 ounce.

Waving and Curling Fluid.—A pale, brownish mucilagenous liquid containing a gum in an alcohol-water medium. It provides a solution for wetting the hair so that it can be stretched into the "wave" or "curl" configuration and will be held in this position by the adherent film as long as the hair is not exposed to excessive moisture or shampooing.

Bottle, 8 ounces.

Mascara.—Composed of blended waxes and coloring matter to enhance the color of the eyebrows and eyelashes.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

Edited by
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Editor for Current Medical Literature, GEORGE HALPERIN, M.D.

Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, SEPTEMBER 10, 1949

FINANCING OF HOSPITAL CARE

The modern hospital has evolved from a publicly supported institution which gave institutional and domiciliary care to the poor and unfortunate when they were sick to a complex intricate organization which serves a variety of purposes in the field of health. The hospital has evolved from an institution usually supported by the community or government to one maintained by private agencies and philanthropies and by the fees of persons in the community with the greatest financial resources. Once only the poor went to the hospital when they were sick. Now all classes of people seek the hospital for medical care, including diagnosis, treatment, relaxation and rehabilitation. Modern medicine costs more and is worth far more because of increasing years of life expectancy free from unnecessary suffering. With the advance of medical science at an unprecedented rate, the cost of operation of hospitals has outpaced the sources of individual philanthropy and has extended beyond the ceiling of the ability of most persons to pay for what they receive.

Hospitals serve also as the training centers of great numbers of personnel in the field of health. They fulfil another fundamental function as centers for research in the medical sciences. Many public health activities, including the practice of preventive medicine, are gravitating toward the hospitals. Indeed, the hospital is the focus for the health activities of the community. When the offices of the public health services are associated with the hospital it becomes truly a health center.

The considerations here set forth emphasize the importance of adequate financing for hospitals and at the same time indicate the need for careful study of the factors that enter into the costs of services and the efficiency of the procedures.

Most of the medical care given to the people of the United States in hospitals is provided by the nonprofit voluntary hospital. These institutions serve more than two thirds of all patients admitted to hospitals each year. In 1945 the nonfederal civilian hospitals reported expenditures of 1.4 billion dollars; these same hospitals by 1948 reported expenditures of almost 2.4 billion dollars. The impending financial crisis in the economic situation of the United States, which is approaching the end of four years of inflationary trends, has emphasized the importance of careful consideration of hospital finances. In 1948 one outstanding nonprofit voluntary general hospital reported an operating loss of almost a million dollars. Another similar hospital reported a deficit of $500,000. A majority of the hospitals in Cincinnati have reported an operating deficit of more than $100,000 each for the year. Reports of the American Hospital Association indicate that expenditures in 1948 in nongovernmental general hospitals exceeded income from patients in two thirds of the institutions and expenditures exceeded all income in at least one third of these hospitals. So greatly have costs of care risen in recent years that a large special hospital in Chicago, in which practically all patients pay something and in which a great proportion of the beds are devoted to private patients, shows by its records that not one patient in the hospital during 1949 has paid the cost of the services rendered.

Can patients pay hospital costs? The national average expenditure per patient day in hospitals for short term illnesses during the four year period 1945 through 1948 rose from $8.60 to $13.09. The average cost per day in one state during 1948 exceeded the 1945 average by almost 100 per cent.

During recent years local and state governments and community agencies have been besieged by demands for aid in meeting this critical situation. The process is not a favorable one. Sudden changes in legislation or in municipal or state aid or sudden decreases of income by community agencies might greatly diminish or remove such sources of aid from the conduct of hospitals and thus precipitate a crisis. During the years under consideration voluntary prepayment plans providing insurance against the cost of hospitalization have enrolled many millions of persons. Yet in many instances the insurance does not cover the total of the patient's bill. Patients are astonished and, in such cases, often disturbed when they discover the failure of their insurance to meet the total expenditures. The time has come when an appropriate agency must study the sources of hospital finances, the elements of hospital costs and the entire economics of hospitalization with a view to planning for a sound economic future.

Improvements in medical practice and the advancement of medical science have added greatly to the cost of hospital services. Indeed, the major emphasis in any study of hospital costs may well be placed on the influence of medical practice on the charges made by such institutions. The only effective barrier against wastage of hospital services and against demands made by patients for unessential services not directly related to medical care is the judgment and cooperation of the attending physician. Methods must be found whereby adequate controls over such demands can be established without jeopardizing the cost and the availability of medical care. Perhaps changes in the organization of hospital services or even in the construction of hospitals would yield economies of time for physicians and patients. The bill which the patient receives may include charges for roentgenologic, clinical, pathologic or laboratory services, drugs and accessories to surgical procedures, which constitute a major portion of the hospital costs. In present circumstances of prepayment for hospital care many beds are utilized by patients undergoing diagnostic study or treatment with physical medicine or psychiatric services who might equally well be kept on an ambulatory basis.

Practically every hospital is today an educational and research institution; many hospitals are equally devoted to preventive medicine and the interest of the public health. These activities contribute inevitably to the size of the patient's bill. Analysis of these costs and proper allocation to responsible agencies may yield reductions in the charges to the individual recipient of hospital care. Study of these factors may result in the provision of more adequate income to hospitals from sources other than the patient himself. Such financing would strengthen the financial economy of the hospital and reduce the costs of care to the individual patient.

Our hospitals are on the threshold of nationwide expansion and the development of new services. The scope of the value of the hospital to the community may be diminished and the advancement of the hospital injured by continuance of outmoded systems of financing hospitals. A comprehensive study of the entire situation is needed immediately; such research should yield more efficient operation, lessened demand for personnel and diminution of cost to the individual patients.

EXPERIMENTAL RUBELLA IN HUMAN VOLUNTEERS

Gregg in 1941 in New South Wales (Australia) established a relationship between the occurrence of maternal rubella and fetal abnormalities. His observations were confirmed by Swan[1] and his co-workers in Australia and by Reese[2] in the United States. Numerous reports from Australia, England and America have confirmed the observation that maternal rubella in the first trimester of pregnancy is responsible for congenital defects such as cataract, deaf-mutism, and congenital heart lesions.

Anderson[3] reports experiments on human volunteers undertaken to demonstrate the feasibility of immunizing girls before marriage and finding a means to prevent infection in vulnerable pregnant women exposed to rubella. The planning of these studies in human volunteers was conducted by the Hall Institute (Melbourne, Australia). The infective material was obtained from throat washings from typical cases of rubella. The material was sealed in ampules at the bedside of the patient, frozen and stored in a mixture of solid carbon dioxide and absolute alcohol. The time taken to obtain the washing from the patient and to store it at —70 C. was no more than five minutes.

Experiments carried out on 40 women volunteers demonstrated that typical rubella could be produced by the inoculation of women volunteers by the respiratory route. The agent responsible remained viable in the presence of 200 Oxford units of penicillin per cubic centimeter, and the evidence suggests that it was filtrable through a millimicron membrane; it is, therefore, probably a virus. The virus was present in throat washings taken on the first day of the rash. The virus remained infective for at least ninety days when stored as frozen throat washings at —70 C. The incubation period, before the appearance of a rash, in human subjects infected by inhalation ranged from thirteen to twenty days. Lymphadenopathy preceded the onset of the rash by as long as six days in some instances. Susceptible persons were infected by contact with the experimental disease. The artificially induced disease did not differ in any way from he natural rubella, and the immunity produced should be equally effective.

Two groups of experiments in which the infective dose employed was obviously large and effective revealed that 14 out of 25 volunteers did not show signs of infection following either the artificial inoculation or subsequent intense natural exposure. Five of these persons gave a history of infection six to nine years previously, and the other 9 probably experienced a subclinical or an unnoticed infection. This in the opinion of Anderson is strong circumstantial evidence that infection provides a high degree of immunity for at least nine years. An artificially induced infection in a woman of 20 could, therefore, be expected to insure immunity over the usual child-bearing period. The possible application of these results to the deliberate infection and immunization of young women as a public health measure will have to take into consideration the existence of a considerable proportion of resistant persons without history of rubella and the dangers of transmission of other infections.

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[1] Swan, C.; Tostevin, A. L.; Moore, B.; Mayo, H., and Black, G. H. B.: Congenital Defects in Infants Following Infectious Diseases During Pregnancy, with Special Reference to the Relationship Between German Measles and Cataract, Deaf-Mutism, Heart Disease and Microcephaly, and to the Period of Pregnancy in which the Occurrence of Rubella is Followed by Congenital Abnormalities, M. J. Australia **2**:201 (Sept. 11) 1943.

[2] Reese, A. B.: Congenital Cataract and Other Anomalies Following German Measles in the Mother, Am. J. Ophth. **27**: 483 (May) 1944.

[3] Anderson, S. G.: Experimental Rubella in Human Volunteers, J. Immunol. **62**:29 (May) 1949.

Current Comment

NEW SOURCE OF SUPPLY FOR CORTISONE

Following the first announcement of the use and value of cortisone in rheumatic diseases came the startling statement that an African plant can be used as a source of supply for this substance. Until recently cortisone was prepared solely from a bile acid. Unfortunately, the product is difficult to manufacture and the supplies even for clinical investigation are so limited that a committee has been formed to aid in the distribution of the drug for research.[1] Many victims of arthritis have requested physicians to use cortisone. Such requests now have increased with the announcement that the African Strophanthus seed may provide more of this scarce remedy. Many problems remain for solution; for example, the species which contain the basic material must be identified, conditions of growth studied and other factors explored. Adequate supplies of cortisone from any source will not be available in the near future, although other sources are being investigated. While awaiting the results of the now intensified research on production of cortisone, let us not forget the great accomplishments of physical medicine in achieving relief in the rheumatic diseases.

HEPARIN INHIBITION OF CELL DIVISION

When a living cell is about to divide, its protoplasm undergoes "mitotic gelation," a sharp increase in viscosity. After the mitotic spindle is formed, the protoplasm reverts to its original fluid state. Since 1928 leading zoologists[1] have assumed that mitotic gelation is similar to the gelation that takes place in the clotting of vertebrate blood. Logically a substance which inhibits blood clotting might also prevent gelation and subsequent cell division. Heilbrunn and Wilson[2] of the Department of Zoology, University of Pennsylvania, have tested this assumption by exposing a number of unicellular forms to heparin or other anticoagulants. The cells thus far tested include paramecia, fertilized sea urchin eggs, frog eggs and eggs of the worm Chaetopterus. In control fertilized Chaetopterus eggs the initial protoplasmic viscosity of 7 increases to 14 on mitotic gelation; the viscosity falls to 7 as soon as the mitotic spindle is formed. Exposure to dilute heparin solution does not prevent fertilization of these eggs, as deduced from the giving off of the first polar body. Mitotic gelation, however, does not take place, the viscosity remaining at 6 or less. In over 70 per cent of the heparinized eggs cleavage does not take place. This inhibitive effect of heparin is not due to a killing action. Washing the eggs several times in sea water causes a twofold increase in the percentage of cleavage. The fact that heparin can prevent cell division was first noted in 1930 by Fischer,[3] who found that dilute heparin added to a tissue culture prevents tissue growth. Fischer's evidence has been confirmed by Paff and others,[4] who succeeded in cultivating mast cells (heparinocytes) from canine livers. They noted that only heparinocytes grew in their tissue cultures. This they interpret as evidence that products elaborated by the mast cells prevent mitosis by other tissue elements. Local secretion of heparin by human mast cells has been demonstrated by Ehrich[5] and his associates of Philadelphia General Hospital. A proposed extension of their studies to sarcoma cells in mice is announced by Heilbrunn and Wilson.

ALLERGY IN EPIDEMIOLOGY OF COMMON COLD

Although some yet unidentified virus is generally believed to be the cause of the common cold, the role of contributory factors, such as exposure to cold or fatigue, is still obscure. Fox and Livingston[1] believe that allergy is an important factor in the susceptibility to colds. Allergic conditions, they point out, are frequently initiated or exaggerated by a fall of temperature and increased humidity. The mechanism of this reaction is probably related to increased permeability of a susceptible membrane, allowing the antigen to contact its specific reagin in the cell more readily. The common cold is an allergic response in susceptible persons to contact with a specific protein, which is the cold virus or its products. The diminished capacity to maintain effective circulation and to tolerate sudden fall of temperature exhibited by the cold-susceptible patient is often observed in allergic patients. The response of the allergic person to these environmental factors results in an outpouring of histamine into various shock centers, particularly into the respiratory tract, in sufficient quantity to weaken the local defense mechanism, preparing these tissues for acceptance of the virus of the common cold or of secondary invaders. The authors in 1940[2] reported a study of 1,200 cold-susceptible persons which revealed that 80 per cent of these persons had various allergies or came from allergic families. In a recent communication[1] these studies embraced over 3,000 persons. The most common pathologic change observed in the upper respiratory tract of cold-susceptible persons is hyperplasia of the mucosal and lymphoid tissues. These patients suffer constantly from postnasal drip and mouth breathing due to nasal intumescence, frequent sore throat, attacks of laryngitis, and stomatitis. The person with hyperplastic tissues highly susceptible to colds rarely has a cold lasting only four to five days. Almost invariably a secondary infection of the sinuses develops, lasting three to six weeks. Apparently, the mucosa must be injured specifically by the virus to cause these long colds. The cold-susceptible patient often presents a borderline or subclinical rather than the frank type of allergy.

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ORGANIZATION SECTION

Washington Letter

(From Our Regular Correspondent)

Sept. 6, 1949.

Congressional Group to Study British Health System

Some members of the House Interstate and Foreign Commerce Committee were scheduled to leave Washington September 10 for the British Isles and the Continent to study European health insurance programs. The committee clerk withheld announcement of the itinerary, names of participating committee members and other salient information. Washington writers and commentators commonly refer to such trips as junkets at public expense. Committees, accordingly, disclose only a minimum of information on a visit of this kind. Representative J. Percy Priest, chairman of the subcommittee on health legislation, is not making the trip. Among members of the subcommittee who are expected to make the flight, by military air transport, are Representatives Biemiller, Wilson and Scott. "The committee hopes to secure information that will be helpful in considering legislation now pending before it," said the announcement. The party will go to England, Sweden "and other European countries."

Six Doctors Named to Child Conference Committee

Appointed late in August by President Truman, the National Committee for the Midcentury White House Conference on Children and Youth has six physicians among its membership of fifty-two. The group's first meeting, under the chairmanship of Federal Security Administrator Oscar R. Ewing, was scheduled for September 8-9 at the White House. Appointees include Dr. Raymond B. Allen, head of the Division of Medical Services, Department of Defense, and president of the University of Washington; Dr. Charles Janeway, Boston; Dr. T. Duckett Jones, medical director, Helen Hay Whitney Foundation; Dr. William Menninger, Topeka, Kan.; Dr. Edward B. Shaw, University of California Medical School, and Dr. Benjamin Spock, Mayo Clinic, Rochester, Minn.

CIO'S *Economic Outlook* Attacks A. M. A.

The August issue of *Economic Outlook*, official publication of Congress of Industrial Organizations, is devoted in its entirety to an attack on the principle of voluntary health insurance and a eulogistic presentation of the case for compulsory health insurance. It charges that the American Medical Association "is spreading highly misleading literature about the proposal and has tried to give the impression that doctors would lose the right to take or reject patients and the right to practice as they think best."

Although CIO offices in Washington issued a two page special press release on the article, which is illustrated with cartoons, minimal space was given to the story by the press in the national capital.

U. S. Clinical Research Center

Some of the outstanding features of the $40 million clinical research center being built at suburban Bethesda, Md., by U. S. Public Health Service were described September 4 by Dr. Leonard A. Scheele, Surgeon General. The fourteen story, air-conditioned structure is due to be completed by July 1952.

Chronic and metabolic diseases and certain types of infectious and tropical conditions will be studied and treated at the center. Patients will be selected from all parts of the country, on referral by physicians, hospitals or other medical institutions.

The radiation laboratory will occupy three floors underground and five above. Nuclear research equipment will include a 12 million volt electrostatic generator, a synchrotron and a 2 million volt radiotherapy machine. A 500 seat auditorium is to be fitted for television of surgical and laboratory procedures. Some of the seats will be especially wired for the hard of hearing. An eight room surgical suite will be provided. All anesthesia will be performed by physicians. Other features include a large scientific library, a central sterilization and supply unit, a rehabilitation department, a chapel and such conveniences as beauty parlor, barber shop and circulating library.

Coming Medical Meetings

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Hospital Association, Cleveland, Sept. 26-29. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

Americon Society of Maxillofacial Surgeons, Montreal, Can., Sept. 11-14. Dr.Casper M. Epsteen, 25 E. Washington St., Chicago 2, Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 20-23. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver, Executive Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Pensacola, Fla., Oct. 6-7. Dr. Arthur J. Butt Jr., 1101 N. Palafox St., Pensacola, Fla., Secretary.

Indiana State Medical Association, Indianapolis, Sept. 26-29. Mr. Ray E. Smith, 1021 Hume-Mansur Bldg., Indianapolis 4, Executive Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 3-6. Dr. W. Merritt Ketchum, 630 Shukert Bldg., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 6-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel and Civic Auditorium, Sept. 21-23. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, St. Louis, Jefferson Hotel, Sept. 28-30. Dr. Harold Swanberg, 209-224 W. C. U. Bldg., Quincy, Ill., Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 17-19. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Nevada State Medical Association, Elko, Sept. 29-Oct. 1. Dr. Roland W. Stahr, 118 California Ave., Reno, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Pacific Association of Railway Surgeons, Sun Valley, Idaho, Challenger Inn, Sept. 23-25. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 26-29. Dr. W. F. Donaldson, 8104 Jenkins Arcade, Pittsburgh 22, Secretary.

Southern Minnesota Medical Association, Red Wing, Sept. 12. Dr. W. A. Merritt, 102 Second Ave. S.W., Rochester, Secretary.

Southwestern Surgical Congress, Houston, Tex., Shamrock Hotel, Sept. 26-28. Dr. C. R. Rountree, 1200 N. Walker St., Oklahoma City, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept. 11-14. Dr. James W. Haviland, 338 White-Henry-Stuart Bldg., Seattle, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder and Milwaukee Auditorium, Oct. 3-5. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15. Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

Wyoming State Medical Society, Casper, Sept. 12-14. Dr. George H. Phelps, 1606 Capitol Avenue, Cheyenne, Secretary.

PROGRAM OF THE AMERICAN MEDICAL ASSOCIATION FOR THE ADVANCEMENT OF MEDICINE AND PUBLIC HEALTH

A Federal Department of Health

1. Creation of a Federal Department of Health of Cabinet status with a Secretary who is a Doctor of Medicine, and the coordination and integration of all Federal health activities under this Department, except for the military activities of the medical services of the armed forces.

Medical Research

2. Promotion of medical research through a National Science Foundation with grants to private institutions which have facilities and personnel sufficient to carry on qualified research.

Voluntary Insurance

3. Further development and wider coverage by voluntary hospital and medical care plans to meet the costs of illness, with extension as rapidly as possible into rural areas. Aid through the states to the indigent and medically indigent by the utilization of voluntary hospital and medical care plans with local administration and local determination of needs.

Medical Care Authority with Consumer Representation

4. Establishment in each state of a medical care authority to receive and administer funds with proper representation of medical and consumer interest.

New Facilities

5. Encouragement of prompt development of diagnostic facilities, health centers and hospital services, locally originated, for rural and other areas in which the need can be shown and with local administration and control as provided by the National Hospital Survey and Construction Act or by suitable private agencies.

Public Health

6. Establishment of local public health units and services and incorporation in health centers and local public health units of such services as communicable disease control, vital statistics, environmental sanitation, control of venereal diseases, maternal and child hygiene and public health laboratory services. Remuneration of health officials commensurate with their responsibility.

Mental Hygiene

7. The development of a program of mental hygiene with aid to mental hygiene clinics in suitable areas.

Health Education

8. Health education programs administered through suitable state and local health and medical agencies to inform the people of the available facilities and of their own responsibilities in health care.

Chronic Diseases and the Aged

9. Provision of facilities for care and rehabilitation of the aged and those with chronic disease and various other groups not covered by existing proposals.

Veterans' Medical Care

10. Maintenance of existing high standards of medical care for veterans, including extension of facilities where the need can be shown and, where practicable, care of the veteran in his own community by a physician of his own choice.

Industrial Medicine

11. Greater emphasis on the program of industrial medicine, with increased safeguards against industrial hazards and prevention of accidents occurring on the highway, at home and on the farm.

Medical Education and Personnel

12. Adequate support with funds free from political control, domination and regulation of the medical, dental and nursing schools and other institutions necessary for the training of specialized personnel required in the provision and distribution of medical care.

GOVERNMENT SERVICES

ARMY

DR. GRADY APPOINTED SCIENTIFIC DIRECTOR

Brigadier General Raymond O. Dart, director of the Army Institute of Pathology, with the approval of the Surgeon General and on recommendation of the Committee on Pathology of the National Research Council, has announced the appointment of Dr. Hugh G. Grady as the scientific director of the American Registry of Pathology, succeeding Colonel James E. Ash, who is retiring from active participation in the registries.

Dr. Grady received his M.D. degree from Jefferson Medical College in 1934 and served an internship and residency at the Philadelphia General Hospital. He has since been an associate professor at Jefferson Medical College and pathologist at St. Mary's Hospital in Philadelphia and with the National Cancer Institute. During the war he served as pathologist and executive officer of the Army Institute of Pathology. He also served as chief of laboratory service, Winter General Hospital, Topeka, Kan., and the Station Hospital, Camp Carson, Colo., and as commanding officer of the Antilles Department Laboratory, Puerto Rico.

MEDICAL DEPARTMENT RETAINS 300 CIVILIAN INTERNSHIPS

The Army Medical Department will maintain 300 spaces for the current fiscal year in the Civilian Intern Program, which, since its inception last year, has been one of the most effective means of recruiting medical personnel for the Army.

Under the Civilian Intern Program, senior medical students who have been accepted for internship training in a civilian hospital approved by the American Medical Association are invited to apply for commissions in the Medical Corps Reserve. If they qualify, they are commissioned as first lieutenants in the Reserve and complete their internships as officers on active duty, with full pay and allowances. On completion of their internship training, they apply for commissions in the Regular Army Medical Corps.

The Civilian Intern Program is one phase of the Army Medical Department's Graduate Professional Training Program. Another is the Military Intern Program, under which senior medical students who apply and are accepted for Medical Corps Reserve commissions as first lieutenants receive their internship training in an Army general hospital approved by the Council on Hospitals and Medical Education of the American Medical Association.

OFFICERS SELECTED FOR ADVANCED TRAINING

The following additional medical officers have recently been accepted for advanced training by the civilian institutions indicated:

Col. Clifford A. Gray, Mayo Clinic, Rochester, Minnesota, radiology.

Col. Thomas W. Mattingly, Harvard Medical School, Boston, cardiology.

Col. Byron L. Steger, Johns Hopkins University, Baltimore, public health.

Col. Elmer A. Lodmell, University of California Medical School, San Francisco, "Oncology Newer Aspects."

Lieut. Col. Harold S. McBurney, Mellon Institute of Industrial Research, Pittsburgh, "Second Annual Symposium on Orthopedic Appliances."

Capt. Edward F. Gudgel, University of Minnesota, Minneapolis, dermatology.

First Lieut. Albert G. Miller, University Hospitals, Minneapolis, residency in pediatrics.

First Lieut. Jay C. Hoyt, St. Francis Hospital, Peoria, Illinois, residency in medicine.

First Lieut. Henry T. Russell, Jefferson Davis Hospital, Houston, Texas, residency in pathology.

First Lieut. Norman R. Davis, Baltimore City Hospitals, Baltimore, residency in ophthalmology.

First Lieut. Philip H. Philbin, Peter Bent Brigham Hospital, Boston, residency in pathology.

NEW MEDICAL SERVICE CHIEF AT WALTER REED

Col. Paul S. Fancher assumed duty August 16 as chief of medical service, Walter Reed General Hospital, according to Major General Paul H. Streit, commanding general of the Army Medical Center. He succeeded Col. Charles R. Mueller, medical service chief since June 1946, who has been transferred to Murphy General Hospital, Waltham, Mass. For the past two and one-half years Colonel Fancher has been chief of medical service, Percy Jones General Hospital, Battle Creek, Mich.

NAVY

SPECIAL WEAPONS AND RADIOACTIVE ISOTOPES

The Surgeon General, Rear Admiral C. A. Swanson, recently announced the establishment of two new courses of instruction for inactive reserve medical officers in medical aspects of special weapons and radioactive isotopes. The courses will be given under the sponsorship of the medical officer in commend, Naval Medical School, National Naval Medical Center, Bethesda, Md. The first course is scheduled to begin Sept. 26, 1949, and will continue through October 1. The second course is to begin November 10, and will continue through November 19.

Inactive reserve medical officers who desire to attend one of these courses should submit a request for training duty to the commandant of their Naval District. Requests for the November course should reach the commandant's office prior to October 15.

The facilities at the Naval Medical Center make it necessary to restrict the number of attendance of each course to 210. District quotas will be established by the Bureau of Naval Personnel. A limited number of sleeping quarters will be available at the Center to those who wish such accommodations. Full mess facilities will be available.

PHOTOFLUOROGRAPHIC EXAMINATIONS

A total of 262,341 photofluorographic examinations were performed on Navy civilian employees at Navy Medical Department activities in the Continental United States and overseas between March 1948 and June 1949. Five out of every 1,000 persons examined were found to have evidence of tuberculosis which required immediate attention. In addition, 3 out of every 1,000 persons examined were found to have evidence of other diseases within the chest requiring immediate attention, such as lung tumors and heart disease. These persons were not aware of their illness at the time of their examination.

NAVAL HOSPITAL AT ST. ALBANS

Ceremonies at the laying of the cornerstone for the new construction of permanent facilities at the U. S. Naval Hospital at St. Albans, N. Y., were held recently. Rear Admiral C. A. Swanson, the surgeon general and chief of the Bureau of Medicine and Surgery, was one of the speakers for the occasion. Others from the Bureau of Medicine and Surgery who attended the ceremony were: Rear Admiral Joel T. Boone (USN), Rear Admiral C. J. Brown (USN). Capt. L. G. Jordan (USN), Capt. O. H. Alexander (USN) and Lieut. Comdr. A. H. Nelson (USN).

WOMEN DOCTORS TO INTERN IN NAVY HOSPITALS

For the first time in the history of the Medical Department of the Navy, three women doctors, recent graduates in medicine, have been assigned to Navy hospitals as interns. There are seventeen other women graduates in medicine who have been assigned to civilian hosiptals under the Navy's Civilian Intern Training Program. The three doctors assigned to Navy hospitals are:

Lieut. (jg) Suzanne W. Brown, New Market, Va., to the Naval Hospital, National Naval Medical Center, Bethesda, Md. (graduated: Medical College of Virginia).

Lieut. (jg) Hannah H. Pendergast, 1904 Spaulding Street, Boise, Idaho, to the Naval Hospital, Chelsea, Mass. (graduated: Vermont University School of Medicine).

Lieut. (jg) Mary W. Tilden, Jamestown, N. C., to the Naval Hospital, Great Lakes, Ill. (graduated: Medical College of Virginia).

The following doctors (lieutentants, j.g.) were assigned to civilian hospitals:

Helen W. Anderson, 125 South Rolling Road, Springfield, Pa., to the University of Pittsburgh Medical Center Hospitals, Pittsburgh (graduated: Woman's Medical College of Philadelphia).

Ruth M. Allen, 2906 Indian River Road, Norfolk, Va., to Union Memorial Hospital, Baltimore (graduated: Medical College of Virginia).

Eleanor E. J. Bundy, 183 Lamont Drive, Decatur, Ga., to the Medical College of Virginia Hospital, Richmond, Va. (graduated: University of Virginia Medical School).

Barbara J. Call, 9 Oliver Street, Salem, Mass., to Salem Hospital, Salem, Mass. (graduated: Tufts Medical College).

Anna E. Connell, 918 Atkinson Drive, Lufkin, Texas, to University and Affiliated Hospitals, Little Rock, Ark. (graduated: Baylor Medical College).

Julia M. Cullen, 165 Saranac Avenue, Buffalo, to Millard Fillmore Hospital, Buffalo (graduated: University of Buffalo School of Medicine).

Betty J. Kizer, Fairmount, Ill., to Research and Educational Hospital, Chicago (graduated: University of Illinois School of Medicine).

Jacqueline LoGrasso, 513 Prospect Avenue, Buffalo, to Millard Fillmore Hospital, Buffalo (graduated: University of Buffalo School of Medicine).

Margaret L. McGrath, 315 Clearview Avenue, Crafton, Pa., to Philadelphia General Hospital, Philadelphia (graduated: Loyola University School of Medicine).

Elizabeth L. McGee, Bent Road, Bowling Green, Pa., to Hospital of Woman's Medical College of Philadelphia (graduated: Woman's Medical College of Philadelphia).

Virginia M. Norrell, 710 South Chase Street, Wheaton, Ill., to St. Barnabas Hospital, Minneapolis (graduated: University of Illinois School of Medicine).

Sara Jean Parks, 141 East Fairmont Avenue, State College, Pa., to the Medical Center, Jersey City, N. J. (graduated: Hahnemann Medical College).

Patricia L. Pear, 43 Soledad Street, Salinas, Calif., to the Gouverneur Hospital, New York (graduated: Southwest Medical College).

Shirley J. Peterson, 525 North Prospect Avenue, Park Ridge, Ill., to St. Francis Hospital, Evanston, Ill. (graduated: Washington University School of Medicine).

Marion A. Puszcz, 10 Trinity Street, Yonkers, N. Y., to St. Mary's Hospital, Rochester, N. Y. (graduated: New York Medical College).

Mildred V. Tuggle, 1108 Colquett Avenue, North East, Atlanta, Ga., to Hospital of Woman's Medical College, Philadelphia (graduated: Woman's Medical College of Philadelphia).

Irene M. Vrabel, 3-14 34th Street, Fairlawn, N. J., to the Medical Center, Jersey City, N. J. (graduated: Woman's Medical College of Philadelphia).

PUBLIC HEALTH SERVICE

TOUR BY VENEREAL DISEASE EXPERTS

Seven international experts on venereal disease arrived in Washington on August 15 to begin a six week study of United States control centers. The group is sponsored by the World Health Organization and is known as the WHO Syphilis Study Commission. The purpose of the tour is to provide the first international evaluation of American methods of venereal disease control, currently based on rapid treatment with penicillin.

The members of the commission are:

Dr. Juan M. Funes, director, Rapid Treatment Center, Quatemala City, Guatemala.

Dr. E. I. Grin, director, Venereal Disease Dispensary, Ministry of Health, Sarajevo, Yugoslavia.

Dr. N. Jungalwalla, venereal disease adviser to the Government of India.

Dr. Poul V. Marcussen, director, Municipal Venereal Disease Clinic, Copenhagen, Denmark.

Dr. Tauno I. Putkonen, chief of the Venereal Disease Division, Finnish Board of Health, Helsinki, Finland.

Dr. Sidney Laird, Adviser in Venereology, Suffolk, England.

Prof. Pierre Joulia, professor of skin diseases and syphilis, Bordeau University, Bordeau, France.

Dr. P. J. Pesare, medical officer in charge of venereal disease education, Public Health Service, Federal Security Agency, will serve as medical secretary to the commission.

Dr. Leonard A. Scheele, Surgeon General, Public Health Service, said, "The close exchange of technics and methods of treating disease is a basic principle of the work of the WHO. We hope to learn much of value in the control of venereal disease from this group of distinguished experts, and we trust that they will render a full and frank report on their findings so that this nation, as well as other nations, may profit fully from their visit."

After spending a week in Washington, the commission left for Boston; New York; Baltimore; Philadelphia; Chicago; Minneapolis; Hot Springs, Ark.; Atlanta, Ga.; Savannah, Ga., and Chapel Hill, N. C., and will return to Washington the first week in October to participate in the third meeting of the WHO Expert Committee on Venereal Infections at the Pan American Sanitary Bureau on October 10.

SEEK NEW SOURCES OF SUPPLY FOR CORTISONE

While the discovery of cortisone offers great possibilities, the supply at present is limited, and the clinical work necessary to prove the usefulness of this product cannot be done until an adequate supply is available. The manufacturing problem is extraordinarily difficult and expensive.

The United States Public Health Service is launching a program to discover new sources of supply for cortisone and has reason to believe that certain plants of the Strophanthus variety may be a source of supply. An expedition sponsored by the Public Health Service and the Department of Agriculture has been dispatched to obtain specimens of various plants that grow in Africa, Malaya, Liberia and China. The expedition is in charge of Dr. John T. Baldwin of the Department of Agriculture, who will search for plants and investigate the possibilities of cultivating them on a large scale in Liberia as well as the feasibility of transplanting them to the United States. Dr. Erich Mosettig, chemist of the National Institutes of Health, will accompany Dr. Baldwin on preliminary visits to Kew Gardens in London, where certain of these plants are under cultivation, and to the laboratories of Dr. T. Reichstein in Switzerland. The present process of synthesizing cortisone requires thirty-seven steps. There are indications that the process required can be greatly simplified through the use of these plants, permitting a larger and continuous supply at much less expense.

EXAMINATION FOR SANITARIANS (NUTRITIONIST)

A competitive examination for appointment of sanitarians (nutritionist) in the Regular Corps of the United States Public Health Service will be held on Nov. 14, 15 and 16, 1949. Applications must be received no later than October 17.

Appointments will be made in the grade of senior assistant sanitarian (equivalent to Army rank of captain) and are permanent.

Application forms and additional information may be obtained by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C. Attention: Division of Commissioned Officers.

COURSE IN DIAGNOSIS OF RABIES

The Communicable Disease Center of the U. S. Public Health Service, 605 Volunteer Building, Atlanta 3, Ga., announces a one week course in the Laboratory Diagnosis of Rabies, November 14-18. The course is open to all grades of employed laboratory personnel without tuition fee. Travel and living expenses must be paid by the individual or his employer. A list of hotels and rooming houses will be sent to applicants at the time of their acceptance for the course by the medical director in charge of the course at the aforementioned address.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Surgeons' Meeting.—The Southern California Section of the U. S. Chapter of the International College of Surgeons will hold a clinic day program in the auditorium of the Los Angeles County Medical Association September 14. The guest speaker at the dinner at the Hotel Mayfair will be George W. Beadle, Sc.D., chairman of the Division of Biology, California Institute of Technology, Pasadena, whose subject will be "Genes, Enzymes and Viruses."

Courses in Poliomyelitis.—The National Foundation for Infantile Paralysis has made a grant to aid the first of a series of short courses on care of poliomyelitis patients. The first course will be offered November 7-11 at the Orthopaedic Hospital in Los Angeles and will cover the problems of the patient from onset to optimum recovery. The course is particularly recommended for orthopedists, pediatricians and general practitioners who desire an orientation in the over-all care of the patient. Courses for registered nurses and physical therapists will be given from November 7-18. For information address Charles L. Lowman, M.D., 2400 South Flower Street, Los Angeles.

CONNECTICUT

Personal.—Dr. Fred C. Green, New Haven, has been appointed by Governor Bowles to a six year term as a member of the State Tuberculosis Commission. He received his medical degree at Meharry Medical College, Nashville, in 1941, is a graduate of Howard University, Washington, D. C., and has practiced in Connecticut since 1946.

Hospital News.—Construction has begun on a 200 bed general hospital to cost $3,500,000 which is being built by the Greenwich Hospital Association. It is scheduled for completion next fall. Although at first the capacity will be 200 beds, the hospital services are designed to accommodate 300 persons. The three major and three special operating rooms and delivery rooms will be air conditioned.

INDIANA

University Appointment.—Dr. Herbert S. Gaskill, associate in psychiatry of medicine at the University of Pennsylvania School of Medicine, Philadelphia, has been appointed professor of psychiatry at the Indiana University School of Medicine, Bloomington-Indianapolis. Dr. Gaskill, a graduate of the University of Pennsylvania, 1937, serves as a consultant in neuropsychiatry to the Surgeon General's office.

New Mental Multimillion Dollar Hospital.—Cornerstone ceremonies were held July 24 for the $2,000,000 main building and administration unit of the Northern Indiana Hospital at Westville. About one third of the thirty buildings planned for the $22,000,000 mental hospital are already under construction. The hospital will accommodate 1,500 patients by June 1951. It will increase by 30 per cent the state's present facilities for about 9,000 mental patients. According to Mr. Isadore E. Levine, LaPorte, chairman of the board, the hospital will be the first in the nation to handle both civil and criminal mental patients on the same premises. It will accommodate 650 criminals in need of mental care who are now housed in the State Prison at Michigan City.

KENTUCKY

Dr. Eller Appointed Head of Department.—Dr. C. Howe Eller, Richmond, Va., has been appointed head of the department of preventive medicine and public health at the University of Louisville School of Medicine and director of the Louisville-Jefferson County Health Department. He is a graduate of the University of Colorado School of Medicine, 1930, and has been a member of the School of Hygiene and Preventive Medicine, Johns Hopkins University School of Medicine, Baltimore. The Louisville-Jefferson County Health Department combines its services with the Louisville General Hospital, State Tuberculosis Sanatorium and the Medical School.

Employee Health Survey.—An employee health survey set up by Kentucky industries is being conducted by the state department of health to obtain information from each plant regarding its doctors, nurses or first aid attendants, medical examinations, laboratory or first aid quarters, rules on physical examinations, plans for future medical programs and employee health needs. The purpose of the survey, which will be completed in two months, is to provide statistical data to interested agencies for use in planning full time county health setups, to insure effective use of state and local public health services and to provide a mailing list for distributing information on public health.

MAINE

Board of Registration of Medicine.—At the regular July meeting of the Maine Board of Registration of Medicine, Dr. Magnus F. Ridlon, Bangor, was elected chairman and Dr. Adam P. Leighton, Portland, secretary. This is Dr. Leighton's thirty-fifth year as a member of the board. Dr. Paul D. Giddings of Augusta was appointed by Gov. Frederick G. Payne to replace Dr. Roland L. McKay of Augusta. Dr. Seth H. Read, Belfast, was reappointed for a six year term.

Dedicate New Laboratory Buildings.—The Hon. Harold L. Ickes and Surgeon General Leonard A. Scheele, Washington, D. C., spoke at the dedication ceremonies of the reconstructed Roscoe B. Jackson Memorial Laboratory at Bar Harbor, Maine, on the occasion of the laboratory's twentieth anniversary, August 21. Ceremonies took place on the first floor of the nearly completed main wing of the new laboratory which replaces the units destroyed during the forest fire of 1947. Visitors looked down on the group of modern summer school buildings donated and dedicated last year by the Ladies Auxiliary to the Veterans of Foreign Wars. The laboratory's restored library, which will be housed in this wing, was officially dedicated on August 3 and was also a gift of the Ladies Auxiliary. Other events scheduled include the remainder of scientific lectures by outside scientists which started on June 21, a reunion of staff members and guest investigators and special open house days. In announcing the dedication ceremonies, Dr. Clarence C. Little, who in 1909 started what is now the oldest strain of inbred mice, now in its two hundred and nineteenth generation, said: "Jackson Laboratory today is bigger and stronger than ever before. There are larger stocks of mice on hand at the laboratory now than at the time of the fire, when 90,000 were wiped out. Our own scientists are still working in improvised quarters, which will house new stocks of mice when the main unit is completed." The new buildings, started on May 6 of the year following the fire, consist of four three-story wings of brick, concrete and aluminum and will house experimental animals, the basic pure strains which are distributed to all the laboratories, facilities for the resident staff of investigators and their assistants and working space for a number of visiting scientists for all-year-round use. There will be special laboratories for biochemistry, bacteriology, tissue culture and other special technics. The total construction cost of the new buildings, including the summer research center donated by the Ladies Auxiliary, is $955,000. A grant from the Rockefeller Foundation covered the cost of unit 1 and part of unit 2. The federal government, through the National Cancer Institute, has contributed $350,000. The remainder has been gained through grants from philanthropic foundations and contributions from the Jackson and Webber families and a large number of persons all over the country.

MINNESOTA

Public School Medical Report.—The annual report of the Minneapolis Public Schools Health Service, released on July 16 by Dr. Hermina H. Hartig, chief school physician, showed that 15,934 Minneapolis school children were examined in 1948-1949, an increase of 5,000 over the previous year. The eight physicians who gave part time service to the schools detected eye and ear defects in about 12 per cent of the children. The physicians discovered 560 cases of malnutrition and 230 cases of athlete's foot. The commoner communicable diseases were found in the same incidence as in previous years, but the number of poliomyelitis cases went from 5 in 1947-1948 to 66 in 1948-1949. The report revealed that 15 per cent of Minneapolis public school pupils have not been immunized against smallpox and that 6 per cent have not been immunized against diphtheria.

MISSISSIPPI

Dr. Underwood Honored.—Dr. Felix J. Underwood, state board of health director, was honored August 8 on his twenty-fifth anniversary as health officer for the state. At the meeting, presided over by Dr. Henry Boswell, a member of the state board of health, Dr. Underwood received a scroll bearing more than a hundred signatures and a new Buick sedan given by many friends.

MISSOURI

Personal.—Dr. Leo Wade, formerly assistant professor of medicine and preventive medicine, Washington University School of Medicine, St. Louis, resigned July 1 to become associated with the medical department of the Standard Oil Company of New Jersey.

Kansas City Clinical Conference.—The Kansas City Southwest Clinical Society will hold its annual fall clinical conference at the Municipal Auditorium, Kansas City, October 3-6. Out of state speakers include:

Edgar V. Allen, Rochester, Minn., Clinical Use of Anticoagulants.
Harry E. Bacon, Philadelphia, Diverticulitis of the Sigmoid: Indications for Surgery.
Grayson L. Carroll, St. Louis, Urinary Infections—Their Treatment.
Oscar T. Clagett, Rochester, Minn., Indications for Pulmonary Resection.
Ralph W. Danielson, Denver, Ocular Conditions in Children.
Aubrey O. Hampton, Washington, D. C., Benign and Malignant Ulceration of the Stomach.
Lewis M. Hurxthal, Boston, Diagnosis of Angina Pectoris.
Frank H. Lahey, Boston, Antithyroid Agents in Thyroid Disease.
Virgil H. Moon, Winston-Salem, N. C., Fluid Balance in Health and Disease.
Walter L. Palmer, Chicago, Treatment of Intractable Ulcer.
John L. Parks, Washington, D. C., Pathology of Pregnancy.
Isidore S. Ravdin, Philadelphia, Recent Advances in Preoperative and Postoperative Care.
Wolfgang W. Zuelzer, Detroit, Anemia in Infancy and Childhood.

Round table luncheons will be held daily, and a clinicopathologic conference will meet Monday evening. There will be scientific and technical exhibits.

NEBRASKA

State Association to Review Complaints.—The Council on Professional Ethics, designed as a self-disciplinary body, was set up at the annual meeting of the state medical association last May in Omaha. The council has announced that it is prepared to review complaints brought by patients against doctors who are members of the state association. The house of delegates of the association has established procedures by which complaints against doctors will be judged. Members of the council are Drs. Morris Neilsen Blair, chairman; John R. Kleyla, Omaha; George E. Charlton, Norfolk; Charles F. Heider, North Platte, and Karl S. J. Hohlen, Lincoln.

NEW MEXICO

State Medical Election.—The New Mexico Medical Society at its recent meeting elected the following officers for the coming year: Drs. James W. Hannett, Albuquerque, president; I. J. Marshall, Roswell, president-elect, and Harold L. January, Albuquerque, secretary-treasurer. Six members of the New Mexico Medical Society were appointed to honorary membership by the house of delegates at the annual meeting in May. The newly appointed members are: Drs. Charles W. Gerber, Las Cruces; Frederick F. Doepp, Carlsbad; William W. Phillips, Roswell; Alexander P. Horwitz, Roswell; Homer A. Stroup, Artesia, and Chester Russell, Artesia. Zalmon E. Funk, Santa Rosa, is the only other honorary member of the society.

NORTH CAROLINA

Memorial Infirmary.—Gardner-Webb College, Boiling Springs, will offer medical care to college students and residents of the area at its S. S. Royster Memorial Infirmary to be opened in October. Provided from a fund started by the late Dr. Stephen S. Royster of Shelby and supplemented by his family, the infirmary will be completed by the community and staffed for twenty-four hour service. It is a one story T-shaped structure containing twelve beds, offices for the college physicians and nurses, x-ray equipment, diathermy facilities and a small diagnostic laboratory. The college hopes to be able to cooperate with county and state health agencies in providing preschool clinics, blood tests for syphilis, immunization, chest roentgenograms, home visits by nurses, Red Cross blood donations and an educational program in health.

PENNSYLVANIA

New State Mental Health Department.—Dr. Hilding A. Bengs, assistant director of the Bureau of Mental Health in the Pennsylvania State Department of Welfare since 1944 and director since 1946, has been named state commissioner of mental health. Dr. Bengs had for twelve years been on the Warren State Hospital staff before entering public health work. The position of state commissioner of mental health is a newly created post.

Annual Graduate Institute.—The Third Annual Graduate Education Institute of the Medical Society of the State of Pennsylvania will open October 3 with sessions in the following cities: Allentown, Clearfield, Erie, Harrisburg, Johnstown, Lancaster, Oil City, Reading, Scranton, Washington and Williamsport. A large faculty of medical teachers will hold ten full day seminars, five in the fall and five in the spring. More than 300 lecturers from the medical schools in Pennsylvania will take part in this program.

Philadelphia

Bequest to Medical College.—The Women's Medical College of Pennsylvania at Philadelphia has been bequeathed $10,000 in the will of the late William S. Meade of Haddon, Conn. Mr. Meade is a former Wesleyan University professor.

Personal.—Dr. Chevalier Jackson, professor of bronchoesophagology at Temple University School of Medicine, Philadelphia, was awarded an honorary fellowship by the Royal College of Surgeons at the International Congress of Otolaryngology in Edinburgh, Scotland, on July 26.

SOUTH CAROLINA

Society News.—The South Carolina Surgical Society was organized in Charleston June 23 with Dr. George H. Bunch, Columbia, as president. Dr. William C. Cantey, Columbia, was elected secretary-treasurer.

Piedmont Postgraduate Assembly.—The annual Piedmont Postgraduate Assembly will be held September 20-21. Included in the program are:

Edgar A. Hines Jr., Rochester, Minn., Diagnosis of Peripheral Vascular Diseases.
John R. McCain, Atlanta, Ga., Management of Prolonged Labor.
Calvin B. Stewart, Atlanta, Ga., Cancer of the Female Genital Organs.
Paul B. Beeson, Atlanta, Ga., The Newer Antibiotics.
Clyde F. Bowie, Anderson, S. C., Management of Injury to the Urinary Tract.

Panel discussions of chest injuries; burns and shock, and fractures will be held Wednesday afternoon at 3 p. m.

TEXAS

University Appointment.—John C. Finerty, Ph.D., associate professor of anatomy at Washington University School of Medicine, St. Louis, has been appointed associate professor of anatomy at the University of Texas Medical Branch, Galveston. Dr. Finerty received his professional training at the University of Wisconsin, Madison, and became a Rackham Foundation Fellow at the University of Michigan, Ann Arbor, in 1942. He has been associated with Washington University School of Medicine, St. Louis, for the past few years.

Clinical Pediatrics Meeting.—The Texas Pediatric Society will hold its annual clinical meeting at the Gunter Hotel, San Antonio, October 7-8. Guest speakers include:

Charles A. Janeway, Boston, Recent Advances in Common Communicable Diseases.
Edith L. Potter, Chicago, Treatment of Erythroblastosis.
Wallace S. Sako, New Orleans, Pediatric Emergencies.

Physicians not members of the Texas Pediatric Society will pay a registration fee of $10, which includes luncheon and banquet tickets.

VIRGINIA

State Medical Meeting.—The Medical Society of Virginia will hold its annual meeting at the Chamberlin Hotel, Fort Monroe, October 9-12. Guest speakers include:

R. Lomax Wells, Washington, D. C., Present Day Concept of Industrial Medicine.
Wilburt C. Davison, Durham, N. C., Sir William Osler—Reminiscences.
Herbert Acuff, Knoxville, Tenn., World Medical Association.
Marcus M. Ravitch, Baltimore, Total Colectomy and Anal Ileostomy.
Arthur T. Hertig, Boston, Causal and Preventive Aspects of Spontaneous Abortion.

WEST VIRGINIA

Committee on Hospital Relations.—A special committee on hospital relations authorized by the annual meeting of the West Virginia State Medical Association has been named. Dr. Robert J. Wilkinson of Huntington is chairman and the other members are Drs. Cecil O. Post, Clarksburg, and Robert J. Reed Jr., Wheeling. The committee will attempt to settle the differences which arise among hospitals, hospital managements, and the professional staff at the state level, provided these controversies cannot be settled at the local county level under the broad general principles of the Code of Ethics of the American Medical Association.

GENERAL

Academy of Sciences Meeting.—The National Academy of Sciences will hold its autumn meeting in the Strong Auditorium at the University of Rochester, Rochester, N. Y., October 25-26. The award of medals by the academy will be made at the banquet at 7:30 p. m. October 24 in the Hotel Seneca.

Society for the Crippled.—Nearly $6,000,000 was contributed through the 1949 Easter Seal campaign for service to the nation's handicapped, the National Society for Crippled Children and Adults reports. Among the services the national society and its member units provide for the nation's handicapped are cerebral palsy services and clinics, consultation and organizational services to cerebral palsy parent groups, consultation in speech, occupational and physical therapy, employment services for the handicapped and many other activities. These are supported almost entirely by Easter Seal contributions. More than 90 per cent of the funds raised annually remain in the state in which they are contributed.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

	Week Ended			Jan. 1 to		Total *	
Division and State	Aug. 27, 1949	Aug. 22, 1948	Median Expec.	Aug. 27, 1949	Aug. 28, 1948	March 19-Aug. 27, 1949	March 20-Aug. 28, 1948
New England States:							
Maine	44	5	2	224	15	224	15
New Hampshire	32	..	5	89	7	89	7
Vermont	10	5	2	42	13	40	12
Massachusetts	194	21	27	737	86	737	83
Rhode Island	15	..	1	50	..	50	..
Connecticut	70	7	7	235	53	232	52
Middle Atlantic States:							
New York	573	87	105	2,575	500	2,555	464
New Jersey	122	50	36	566	265	530	258
Pennsylvania	65	47	47	269	260	259	249
East North Central States:							
Ohio	123	76	50	721	474	715	465
Indiana	58	19	16	624	157	614	147
Illinois	276	62	62	1,522	358	1,506	351
Michigan	282	53	53	1,301†	221	1,281†	215
Wisconsin	61	31	26	415	151	401	151
West North Central States:							
Minnesota	183	89	57	911	367	872	359
Iowa	102	57	19	589	328	576	315
Missouri	116	21	10	817	106	806	106
North Dakota	50	5	7	289	27	285	27
South Dakota	25	10	1	166	72	144	72
Nebraska	51	54	18	256	278	243	273
Kansas	33	18	8	395	110	369	107
South Atlantic States:							
Delaware	4	5	5	29	90	27	89
Maryland	16	7	9	74	29	65	28
District of Columbia	7	12	12	41	49	40	49
Virginia	34	31	20	163	261	153	259
West Virginia	18	7	7	204	66	197	61
North Carolina	13	133	17	150	1,759	123	1,735
South Carolina	10	28	5	65	235	52	227
Georgia	15	18	7	109	138	101	137
Florida	6	5	4	141	164	120	147
East South Central States:							
Kentucky	33	8	8	293	108	285	105
Tennessee	31	18	15	303	182	297	175
Alabama	12	17	7	146	118	133	106
Mississippi	19	9	6	214	79	203	77
West South Central States:							
Arkansas	50	7	2	716†	86	705†	84
Louisiana	10	9	4	145	75	133	69
Oklahoma	62	25	7	821	220	814	214
Texas	69	71	34	1,606	1,256	1,515	1,235
Mountain States:							
Montana	2	3	3	25	28	24	18
Idaho	33	3	1	269	81	256	54
Wyoming	9	9	2	61	54	61	54
Colorado	53	4	7	273	44	271	42
New Mexico	14	7	3	92	45	91	43
Arizona	13	14	6	95	61	84	60
Utah	12	4	4	91	34	75	31
Nevada	..	..	..	10	2	10	1
Pacific States:							
Washington	48	12	12	258	108	213	90
Oregon	15	3	6	97	58	81	42
California	101	226	24	1,229	1,877	940	1,845
Total	3,214	1,412	.....	20,513†	11,155	19,597†	10,805
Median, 1944-1948			1,412	7,792		7,529	

* Last two columns show reported incidence since approximate average seasonal low: 23 weeks.

† Corrections (deducted from cumulative totals): Michigan: weeks ended August 6, 1 case; August 13, 2 cases; August 20, 1 case. Arkansas: weeks ended July 30, 2 cases; August 20, 1 case.

American Hospital Association.—This organization will hold its annual convention in Cleveland September 26-29 with headquarters at the Statler Hotel. Subjects under discussion include cooperation of voluntary enterprise and government, each maintaining its status, hospital service which organized labor desires, technical aspects of hospital departmental functions, financing and distribution of hospital care, quality of hospital care and organization for it and supervision within the hospital. The annual banquet will be held Thursday evening. The women's auxiliaries of the association will meet in conjunction with the association.

Funds for Mental Health Program.—The Josiah Macy Jr. Foundation has made a grant of $45,000 to the World Federation for Mental Health to help finance the federation's mental health program adopted recently in Rome. The grant is to be given over a period of three years. The first year $15,000 is given unconditionally, and the grants for the other two years are given on condition that the federation raise at least $60,000 a year from other sources. The federation, founded last year in London by the International Congress on Mental Health, estimates it needs $120,000 annually to set up offices in Geneva and arrange meetings.

Congress of the International Society of Surgery.—This congress will be held in New Orleans October 10-15 under the presidency of Prof. G. Grey Turner, London, England. The program includes:

Surgery and Pathology of the Pancreas, Especially in Relation to Its Endocrine Function, Dr. Ian Aird, London.
Surgery of the Parathyroid Glands, Dr. Paolucci, Rome.
Surgery of the Suprarenal Glands, M. R. Fontaine, Strasbourg.
Pathology and Surgery of the Pituitary Gland, M. Paul Martin, Brussels.
Treatment of Postoperative Thrombosis and Its Sequelae, Alton Ochsner, New Orleans, and Michael E. DeBakey, Houston, Texas.
Causes of Recurrence after Operations on the Biliary Tract, M. R. Demel, Vienna.

Dr. Steigman Joins National Foundation.—Dr. Alexander J. Steigman is currently serving as full time consultant in clinical epidemiology for the National Foundation for Infantile Paralysis. Dr. Steigman recently completed a two year period as senior fellow in pediatrics, National Research Council, during which time he conducted investigations in poliomyelitis at the Children's Hospital Research Foundation in Cincinnati. His temporary departure from pediatrics will be for the purpose of field work in early diagnosis, management and epidemiologic investigations of poliomyelitis. He has been associated with the pediatric department at the University of Pennsylvania and Harvard and Temple universities.

CORRECTION

"Action of Procaine on Sulfonamide Compounds."—In the Query and Minor Note with this title in THE JOURNAL, July 23, page 1068, it was stated that procaine splits into triethanolamine and para-aminobenzoic acid. This was erroneous. Procaine is hydrolized into diethylaminoethanol and para-aminobenzoic acid.

The So-Called "Cerebral Palsy" Program.—In the letter to the Editor in THE JOURNAL, Aug. 13, 1949, on page 1232, the last sentence in the left hand column should read: "The eternal cycle of changing therapeutic measures in those crippled children's problems which result from disease of the central nervous system is sufficient proof that we as clinicians and orthopedists have more difficulty with these problems than with any other."

Marriages

CHARLES EUGENE MAY, Jackson, Ala., to Miss Patricia Ann Holland of Bowling Green, Ky., in Nashville, Tenn., June 18.

JAMES TINDALL QUATTLEBAUM, Columbia, S. C., to Miss Grace Wilbur of Newberry, July 16.

SPIROS P. SARRIS, Lowell, Mass., to Miss Aphrodite Valos of Evanston, Ill., in Chicago, July 23.

WILLIAM IACONETTI, Oakland, Calif., to Miss Lorraine Olsen in San Francisco, July 9.

GEORGE A. BLAKESLEE to Mrs. Nadine Rubans Bandler, both of New York, July 15.

RICHARD Y. WESCOAT to Miss Lucy Grace Gaddy, both of Raleigh, N. C., July 1.

ROBERT E. FLYNN, Albia, Iowa, to Miss Marion Kelleher of Des Moines, June 11.

Deaths

Dr. Irvin Abell ⊕ Louisville, Ky.; former president of the American Medical Association, died August 28, aged 72, of heart failure while on a fishing trip in Canada. Dr. Abell was born in Lebanon, Ky., Sept. 13, 1876. He received his A.M. degree from St. Mary's College, St. Mary, Ky., in 1894 and his M.D. degree from Louisville Medical College in 1897. The following year he did graduate work at the University of Berlin and the University of Marburg, Germany. Since 1900 he practiced in Louisville, where he was on the staff of the Louisville General Hospital and of St. Joseph's Infirmary and a consultant at Children's Free Hospital and Kosair Crippled Children Hospital.

Dr. Abell was a member of the faculty of the University of Louisville for nearly forty-nine years, serving eight years as assistant in surgery, as professor of surgery from 1908-1923 and as clinical professor of surgery until 1947, when he became professor emeritus. He was also a trustee of the university.

Irvin Abell, M.D.

In the American Medical Association Dr. Abell served as a member of the House of Delegates at the annual sessions 1922, 1924-1928 and 1930-1935. From 1931 until 1937 he was a member of the Council on Scientific Assembly and for two years served as its chairman. He was president of the American Medical Association from 1938-1939 and in 1940 was appointed chairman of its Committee on Medical Preparedness.

Dr. Abell was a specialist certified by the American Board of Surgery. He was a fellow of the American College of Surgeons and had been a member of the Board of Regents since 1926 and chairman since 1939. He was a member of the Board of Governors 1925-1928, president of the college in 1946-1947 and president and chairman of the board of directors of the Franklin H. Martin Memorial Foundation. He was a past president of the Southern Surgical Association, Southern Medical Association, American Urological Association, American Gastro-Enterological Society, Southeastern Surgical Congress, the Association of Military Surgeons of the United States and the Kentucky State Medical Association. He was also chairman of the state association's Ephriam McDowell Memorial Committee that purchased the McDowell home in Danville, Ky., and aided in its restoration. He held memberships in the American Surgical Association and the American Society for Control of Cancer and was an honorary fellow of the Royal College of Surgeons.

Dr. Abell was a member of the Surgical Committee of the National Research Council from 1943 to 1946 and was chairman in 1945 of the National Foundation for Infantile Paralysis' committee on a training program for physical therapists and chairman of its general advisory committee. At the time of his death he was chairman of the Committee on Inter-American Relations for the forthcoming Inter-American Congress of Surgery. He was director of the Commonwealth Life Insurance Company, the Fidelity and Columbia Trust Company and the Louisville Foundation. During World War I he was a lieutenant colonel, commanding Base Hospital No. 59, then colonel in the Medical Reserve Corps and commanding officer of the U. S. Army Reserve Corps Hospital No. 59.

Dr. Abell held honorary Sc.D. degrees from the University of Louisville, University of Kentucky at Lexington, Georgetown University, Washington, D. C., and Manhattan College, New York, and honorary LL.D. degrees from Marquette University, Milwaukee, and the University of Cincinnati. In 1938 the University of Notre Dame awarded Dr. Abell the Laetare Medal as an outstanding Catholic layman.

By those who knew him Dr. Irvin Abell will be remembered as a soft-spoken, cultured, learned gentleman, who achieved leadership wherever he chose to affiliate himself. His ability as a surgeon was recognized by his surgical colleagues; his ideals and idealism were known to all the medical profession; he never sought an office, but great responsibilities were constantly placed upon him. Such men are rare in medicine as in other walks of life. The memory of Dr. Irvin Abell will survive the passing of the years.

John William Amesse ⊕ Denver; born in Eagle River, Mich., Jan. 15, 1874; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; since 1945 professor emeritus of clinical pediatrics at the University of Colorado School of Medicine; specialist certified by the American Board of Pediatrics; vice president of the American Medical Association, 1943-1944, and member of the House of Delegates from 1930 through 1938; past president of the Colorado State Medical Society, charter member of the American Academy of Pediatrics; member of the American Public Health Association; past president of the Denver Public Health Council and the Denver City and County Medical Society; served in Spanish-American War, in the Marine Hospital Service, later in the U. S. Public Health Service, seeing service in the Philippines and later as the first health officer of Havana, Cuba, under the American Occupation; one of the physicians in charge of combatting the yellow fever epidemic in New Orleans in 1905; received citation for service in France and England during World War I; during World War II chairman of the procurement and assignment committee for physicians, dentists and veterinarians in Denver; for two years on the state board of health; served on the staffs of the Children's, St. Joseph's, Colorado and Denver General hospitals; died August 21, aged 75, of coronary thrombosis.

Robert Edgar Adair, Cartersville, Ga.; Southern Medical College, Atlanta, 1890; member of the American Medical Association; vice president of the Bank of Taylorsville; died June 17, aged 83, of arteriosclerosis.

James Hoffman Bentson, Rochester, Minn.; University of Minnesota Medical School, Minneapolis, 1943; member of the American Medical Association; fellow in surgery at the Mayo Foundation; served during World War II; died in New York June 28, aged 31, of carcinoma.

Etta Charles, Anderson, Ind.; St. Louis Woman's Medical College, 1895; member of the American Medical Association; served as president and secretary of the Madison County Medical Society; formerly on the staff of St. John's Hospital, where she died July 16, aged 87, of chronic congestive heart failure.

Homer Dickens, DeWitt, Ark.; University of Tennessee College of Medicine, Memphis, 1914; member of the American Medical Association; past president of the Arkansas County Medical Society; died in Little Rock June 6, aged 56.

Spencer Augustus Folsom ⊕ Orlando, Fla.; Emory University School of Medicine, Atlanta, 1917; formerly secretary of the Florida East Coast Medical Society; fellow of the American College of Physicians; served during World War I; past president of the Orange County Medical Society; on the staffs of Florida Sanitarium and Hospital and Orange Memorial Hospital; died June 26, aged 54, of coronary thrombosis.

Victor P. Genge, Fort Walton, Fla.; Tufts College Medical School, Boston, 1916; served during World War I; formerly health officer of Lafayette County, Miss., Lake County Health Department, Tavares, and in charge of the Highlands-Glades Health Unit; died July 20, aged 54, of coronary occlusion and acute glomerular nephritis.

Max Wolper, New York; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1888; died June 22, aged 85, of senility.

Foreign Letters

DENMARK

(From Our Regular Correspondent)

COPENHAGEN, Aug. 7, 1949.

Longevity and Mortality Rate of Danish Doctors

V. A. Fenger and J. Nielsen have studied the longevity and mortality of Danish physicians in four periods. The first is from 1908 to 1915; the second during the decade 1925-1935, and the next two, from 1935 to 1939 and 1940 to 1944. The deaths in all these periods are classified in age groups of five years each.

In the first period, i. e., from 1908 to 1915, the average life of a doctor aged 25 was three years shorter than that of the general population of that age. This difference was reduced to one and a half years in the period 1940-1944. In this period the expectation of life of a doctor who had reached the age of 75 was a trifle longer than that of a 75 year old in the general population. It is noteworthy that in the general population and at all ages in Denmark the expectation of life is considerably better than that of the white population in the United States. There is a corresponding but not so pronounced difference between Danish and American doctors. Like their American colleagues Danish doctors have a lower tuberculosis, cancer and accident mortality rate than the male population as a whole. But Danish doctors have a high suicide rate, and their mortality rate from heart disease is more than 40 per cent higher than that of the corresponding general population. Fenger and Nielsen have worked out a table which shows how a variety of diseases, such as syphilis, diabetes and pneumonia, affect the Danish doctor as compared with Danish laymen of the same age. This study is in many repects comparable to the one by Dublin and Spiegelman on American physicans. The two studies permit comparison between Danish and American doctors.

BCG Vaccination

BCG vaccination is carried out more extensively and systematically in Denmark than in any other country. Convincing evidence for this procedure may be found in a statistical analysis by Dr. T. V. Hyge. His investigations were begun in the spring of 1943 when a fulminating outbreak of tuberculosis occurred in a national school for young girls. Since then he has published his observations on their fate from time to time; his latest communication published in *Ugeskrift for Laeger,* May 19, 1949, brings up to date an observation period of several years. The girls were divided into two groups, tuberculin positive and tuberculin negative from the outset. The negative reactors were grouped according to whether or not they had been vaccinated with BCG. Among 105 originally tuberculin-positive girls exposed to infection there were 4 in whom mild pulmonary tuberculosis developed. Among 106 originally tuberculin-negative girls exposed to infection and vaccinated with BCG there were only 2 in whom pulmonary tuberculosis developed. Among 94 originally tuberculin-negative girls exposed to infection and not vaccinated with BCG there were 70 who became tuberculin positive, and among them were 41 showing signs of tuberculosis.

Knud Faber's Autobiography

The recent publication of the personal recollections of Professor Knud Faber, who soon will be 90 years of age, provides in readable form the history of medicine in Denmark for more than half a century. This book is written as a supplement to Faber's earlier book, "Mit Universitetsliv." With characteristic modesty, he has addressed the present book as a personal greeting to friends and old pupils. As more than half of the doctors in Denmark are former pupils, his readers will represent a wide and appreciative circle.

Included in Faber's earlier research were studies on tetanus and diseases of the stomach and blood. His studies of anemia brought him international recognition. Half a century ago he was appointed chairman of the State Tuberculosis Commission, and thereafter the organization of the campaign against tuberculosis in Denmark was largely his work. Within a few years the first public sanatoriums were begun. At present the tuberculosis stations throughout the country are insuring BCG vaccination of every Dane from the second year of life. This well may be regarded as a reflection of Faber's pioneer work. In 1908 he was designated to reorganize the public health service of Denmark, which required diplomacy as well as administrative experience. In earlier days the school at Copenhagen was Denmark's sole university. Faber advocated the creation of a second university, in Aarhus, and eventually the University of Aarhus was established.

Registration of Drug Addicts

The registration of drug addicts by the public health authorities has been suggested to control their supply of drugs. In the Aarhus district there now is cooperation with the doctors to achieve such control. When a drug addict is discharged from a hospital, the hospital authorities give his name and address to the doctors in the district with a note concerning his drug requirements.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Aug. 4, 1949.

Psychoses and Neuroses in Industrial Workers

Industrial workers of the city of São Paulo are all associates of the Instituto de Aposentadoria e Pensões, a semiofficial organization which furnishes medical care, financial benefits, retirement and pensions. According to a report recently published by Dr. Francisco Tancredi, head of the Division of Neuro-Psychiatry of the Medical Department of the Instituto, among 1,542 associates who sought financial benefits and retirement during the years 1940 to 1945, he was able to find 1,143 cases of psychoses and neuroses. Apparently half of the patients were affected with neuroses not needing hospitalization. The remaining patients presented psychotic symptoms and required hospitalization. Dr. Tancredi points out that of the 1,143 patients only 347 of those with psychoses needed hospitalization, the remaining 796, or practically 70 per cent, being attended at clinics with good possibilities of rehabilitation.

Campaign Against Leprosy

According to a recent release from the Division of Leprosy of the National Department of Health, there are in Brazil, 37,541 persons with leprosy under control; 3,258 were found during 1948. The total number of cases of the disease is estimated at about 50,000, or approximately 78 per 100,000 population. Of the 37,541 patients, 21,546 are interned in thirty-nine leprosariums; the others report to ninety special clinics where they are being treated. The states most active in discovery of new patients are São Paulo, Minas Gerais, Amazonas, the Federal District, Pará, Goyaz and Paraná. Of the 3,258 patients found in 1948, 1,345 had the contagious form of the disease, 1,264 noncontagious and 149 still unclassified. On the basis of the total number of cases known at present, the states with higher incidence are Amazonas, Minas Gerais, Pará, São Paulo, the Federal District, Espirito Santo and Paraná.

The states in which the largest percentages of patients with leprosy are interned in leprosariums are Pará (88.7 per cent), Amazonas (79.5 per cent), São Paulo (76.5 per cent), Paraná (62.0 per cent), Ceará (51.6 per cent) and Minas Gerais (43.6 per cent). There are 3,019 healthy children of diseased parents interned in twenty-seven preventoriums, 38.4 per cent of these children having been interned immediately after birth and 61.6 per cent after having lived for some time with their parents. The federal government in 1948 spent $1,523,750 to cooperate with the states in the work against leprosy, a part of this sum having been used for the construction of leprosariums and another part for the maintenance of clinics and preventoriums.

Correspondence

ESTIMATION OF URINARY SODIUM

To the Editor:—My attention has been called to a letter in The Journal of August 6, page 1172, criticizing the article "Estimation of Urinary Sodium: A Simple Test For Patients on Low Sodium Diets" (J. A. M. A. **140**:670 [June 25] 1949). The letter states, "Certain misconceptions and questionable features should be discussed publicly, lest they aid in perpetuating ideas and practices now considered out of date."

The features pointed out by the correspondent are obvious but are inappropriate to the particular article. The test for the estimation of urinary sodium was proposed for two reasons: (1) because of its simplicity and (2) because clinical trial in our opinion has proved its value. That it is for use by the patient and is only a rough approximation of the urinary sodium with a "large error" was reiterated in the article several times. Furthermore, there is no implication in the article that this procedure be used for the "study of sodium metabolism." Workers in the field of electrolyte metabolism are well aware of the inaccuracies entailed in using chloride values as a precise index of the sodium ion, but there is much excellent old and new data demonstrating that under ordinary conditions a parallelism exists between the urinary excretion of sodium and that of chloride. Despite the large error involved, clinical experience with this simple test, under the conditions described in the article, continues to confirm its great practical value.

J. Marion Bryant, M.D., Ann Arbor, Mich.

RATE OF BLOOD FLOW THROUGH NEEDLES

To the Editor:—In their article on the rate of blood flow through needles (The Journal, Aug. 6, 1949, page 1145), Brew and Dill quote Poiseuille's law to prove that the radius of the needle used in blood transfusions is of much greater importance than the pressure applied to the transfusion system in hastening the rate of flow. Their solution to the problem of massive transfusion required in serious hemorrhage and shock cases is therefore rather simple—to use a 15 gage needle.

The use of a large needle would be the solution if the obstruction to flow in these serious clinical instances resided in the needle. However, the needle plays a minor role in the gravely diminished rate of transfusion encountered in the treatment of deeply shocked persons. The chief cause of obstruction to transfused blood is a contracture of the venous smooth muscle fibers. This cause is generally recognized but is unfortunately described by the passive and inaccurate term of "collapsed veins." That "contracted veins" is the correct term for the state of the venous system in shock is apparent to anyone who has attempted to force blood into a vein using an ordinary hand syringe in a shocked patient. Great force will often be necessary. It is on these occasions that the ordinary drip methods practically fail. Moreover, the force necessary to push the piston will vary during the procedure. The introduction of about 50 cc. of blood under pressure may be followed by temporary venous relaxation. As the blood pressure of the patient rises, it will be found that less force becomes necessary. Similarly, should the patient die during transfusion from irreversible shock, there will be a full relaxation of the vein a few minutes before death, and blood will pour into it as rapidly as desired from the regular drip apparatus.

Many physicians have used the 15 gage needle for blood transfusions and have still been faced with obstacles to speedy blood replacement. The needle used routinely by the Emergency Medical Service of Great Britain in the last war was even larger than our 15 gage needle, but the same phenomenon of transfusion at a snail's pace was frequent.

Methods to overcome the obstruction to transfusion in cases of shock and hemorrhage should therefore be directed to the chief site of resistance—the vein of the recipient. The solution has not yet been reached but will probably depend on paralyzing the vasoconstrictor nerves to the vein employed.

Norman M. Hornstein, M.D., Buxton, N. C.

OPERATIVE OR NONOPERATIVE PROCEDURES FOR UTERINE FIBROIDS

To the Editor:—Reference is made to the article "Operative Vs. Nonoperative Procedures for Uterine Fibroids," by Robert T. Frank (J. A. M. A. **140**:1001-1008 [July 23] 1949). In this article Dr. Frank advocates supravaginal hysterectomy in the treatment of fibromyomas of the uterus, mainly because he never has seen carcinoma arising in the stump. This doctrine is too dangerous to be left uncontradicted. In the material of our comparatively small hospital in the last two years we have treated forty-three histologically proved carcinomas of the cervix, seven of which arose in cervices left after supravaginal hysterectomy. While this material may not be statistically significant, it shows that the remaining cervical stump represents a definite danger to life, and this danger should be weighed carefully against the local discomfort encountered in a certain percentage of patients who have undergone complete hysterectomy.

Herrin, Ill.
Frederick P. Bornstein, M.D.,

BLACK TONGUE

To the Editor:—The article "Black Tongue Associated with Penicillin Therapy," by Samuel A. Wolfson, M.D., which appeared in The Journal (**140**:1206 [Aug. 13] 1949) states that the author had found no reference to this condition in American journals. This disorder was described by me under the title "Black Tongue" in Conn's "Current Therapy" (Philadelphia, W. B. Saunders Company, 1949), wherein it was pointed out that black tongue may be precipitated by the use of penicillin orally, which seems to upset the biologic balance of organisms in the mouth, allowing chromogenic bacteria or fungi to multiply.

Sutton and Sutton, in "Diseases of the Skin" (ed. 10, St. Louis, C. V. Mosby Company) reported a similar observation by Burgheim, who noted black tongue following the administration of sulfanilamide to a patient with gonorrhea, which disappeared when treatment with this drug was discontinued.

Clarence Shaw, M.D., Chattanooga, Tenn.

OBITUARY ANNOUNCEMENTS OF DR. RUFFIN AND DR. TAYLOR

To the Editor:—I am indeed surprised at the brevity of the the necrologies of two outstanding doctors, namely, Sterling Ruffin of Washington, D. C., and Alonzo E. Taylor of Palo Alto, Calif. Sterling Ruffin was one of Woodrow Wilson's physicians—and much more—while Alonzo Englebert Taylor was an outstanding American physiologist and food scientist.

Dr. Taylor was a member of the referee board appointed by a president of the United States, professor of physiologic chemistry of the University of Pennsylvania, professor of pathology and physiologic chemistry of the University of California, director of the Food Research Institute at Leland Stanford and a member of the Hoover Commission, in the capacity of special aid to the chief and a connecting link between the Department of Agriculture and the Food Administration. During, and in the aftermath of, the first World War, Dr. Taylor studied and learned about food conditions in Germany as no other American has, and his observations constituted the basis for some of the government reports.

Lewis William Fetzer, M.D., Dallas, Texas.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg.. Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. Part II, New York City, Feb. 9-10. Address: Sec.-Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., *Rochester, Minn.*

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, October 26. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

Arkansas: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado: * *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, *Guam, % F.P.O., San Francisco.*

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Illinois: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. *5-7. Reciprocity.* Des Moines, Oct. *3, Nov. 7,* Dec. 5. Sec., Dr. M. A. Royal, *506* Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Minnesota: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Jefferson City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Montana: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City.

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe, Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

Ohio: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oregon: *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. *Bobbitt, 608 Failing* Building, Portland.

Oklahoma: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

Rhode Island: * *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Tennessee: * *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

Wisconsin: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona: *Examination.* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Connecticut: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Minnesota: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Liability For Negligence Of Nurse.—This was an action against the defendant hospital to recover damages for injuries sustained by the plaintiff while she was a patient therein, the injuries alleged to have resulted from the negligence of one of the nurses employed by the hospital. From a judgment in favor of the defendant, the plaintiff appealed to the Supreme Court of Mississippi.

The plaintiff charged that an agent of the defendant hospital, while acting as attendant and circulating nurse in the operating room, negligently fastened the plaintiff's feet to the operating table by the use of straps in such manner that the blood circulation in the plaintiff's feet was cut off and that she was kept in such position for such a length of time that her feet were seriously and permanently injured. The injuries consisted of two gangrenous sores, one on the outside of each foot below the ankle. The plaintiff's evidence showed that her feet were entirely normal when she went into the operating room, that they were strapped for about forty-five minutes during the operation, that the straps were not loosened during that time, that the plaintiff was removed to a private room in the hospital after the operation and that when she came out from under the influence of the anesthetic about two hours later her feet were hurting. This was about 1 p. m. About two hours later a special nurse, privately employed by the plaintiff's husband, on complaint that the feet still hurt, placed a hot water bottle to the bottom of the plaintiff's feet. This nurse testified at the trial that the hot water bottle was not hot enough to cause a burn. The plaintiff testified that she was conscious at the time and that she felt no discomfort from the heat of the water bottle. This was the only time that a water bottle was applied to her feet. Not long after this a bluish purple spot appeared on the outside of each foot, where the gangrenous sores later developed, and by the end of the day there was fluid underneath the skin at each spot. The attending nurse testified that these places did not appear to be burns and that they were very slow in responding to treatment.

The circulating nurse testified that she had no independent recollection of having been in the room during the operation but that the hospital chart showed that she was there and was acting as circulating nurse on this operation and that the chart was correct. The circulating nurse handles things that are not sterile and has such duties as strapping a patient's feet to the table. She admitted that gangrene may result if the circulation of blood is cut off for more than fifteen or twenty minutes and further admitted that such result might follow from the use of these footstraps if they were tight enough. She maintained, however, that she did not believe that these straps could be made that tight. She then produced the straps in question and demonstrated to the jury how they are fastened to the feet by fastening them to the feet of one of the plaintiff's physicians. This physician testified before the jury, after Miss Francis had fastened the strap to one of his feet, and he demonstrated that the strap tightens from the weight of the foot and leg, and would continue to tighten from such weight. It is significant to note, said the court, that these straps bind the feet at the very place where the plaintiff's gangrenous sores appeared.

The hospital contended that the plaintiff's injuries were caused by the negligence of her privately employed nurse in placing too hot a water bottle to her feet, but, said the court, there is absolutely nothing in the record to justify such a contention. The evidence showed conclusively that the water bottle was applied to the bottom of the feet and not to the outside. It is inconceivable that a hot water bottle could have been placed in such a manner as to blister one place on the outside of each foot, both in identically the same location, without also blistering some other part. The demonstration made before the jury, coupled with the testimony of the plaintiff's physician, was such that the jury could have found, as reasonable men, that the straps continued to tighten on the plaintiff's feet to the extent of obstructing the circulation of blood therein, that reasonable care on the part of the defendant required a temporary loosening of these straps and that a failure so to do proximately caused the injuries to the plaintiff. In fact, concluded the Supreme Court, the evidence excluded every causal connection except the straps, and we are of the opinion that the lower court erred in refusing to submit the case to the jury.

The doctrine of res ipsa loquitur does not in any instance create a case of absolute liability but simply raises a presumption or makes out a prima facia case of negligence to the extent that the defendant is called on to meet it with an explanation. Aside from the stated doctrine, and without applying the familiar Latin phrase thereto, the same result is effected under the general rules applying to circumstantial evidence. The case presented by the record here, said the court, rises above the domain of mere conjecture or possibility and presents facts and circumstances from which a jury might reasonably find that the defendant was guilty of negligence proximately contributing to the plaintiff's injury. It matters not, continued the court, whether our decision be grounded on the doctrine of res ipsa loquitur as interpreted by some of the courts and textbook writers or whether it be that the case here presented is based on circumstantial evidence from which a reasonable inference or presumption of negligence may be drawn, we are nevertheless of the opinion that the plaintiff's case should have been submitted to a jury for decision and that consequently the direction of a verdict against her was erroneous. The judgment of the trial court in favor of the hospital was accordingly reversed and the cause remanded for a new trial. *Palmer v. Clarsdale Hospital, 40 S. (2d) 582 (Miss., 1949).*

Evidence: Admissibility of Results of Lie Detector Tests.—The defendant was convicted of uttering and publishing forged checks and from such conviction appealed to the Supreme Court of Nebraska.

Evidence for the state consisted mainly of testimony tending to identify the defendant as the woman who uttered and published checks proved to have been ficticious. The defense consisted of testimony tending to establish an alibi and evidence tending to prove that the handwriting on the checks was not that of the defendant. In addition, the defendant called a witness who testified that he was a polygraph operator for the Nebraska Safety Patrol. He testified that a polygraph machine, commonly referred to as a lie detector, makes recordings of the increase and decrease of blood pressure, the increase and decrease of perspiration, and the inhalation and expiration of breath. He described the machine and the manner in which it makes the recordings and testified that the defendant voluntarily submitted to certain tests. The defendant then offered the witness to testify to and prove the results of the tests so made, which, the defendant contended, would show a normal reaction to all questions propounded with reference to the commission of the offenses charged and thus would indicate that the defendant was not guilty of such offenses. The state's objection to the admission of such testimony was sustained by the trial court.

In approving the action of the trial judge in refusing to admit in evidence the results of such tests, the Supreme Court said that it is apparent from reported cases of other jurisdictions that the scientific principle involved in the use of such polygraph has not yet gone beyond the experimental, and reached the demonstrable, stage and that it has not yet received general scientific acceptance. Experimenting psychologists themselves, the court said, admit that a wholly accurate test is yet to be perfected. Cogent reasons to support the general rule against the admission of such evidence readily suggest themselves, continued the Supreme Court, and if such evidence were admitted the vital function of cross examination would be impaired and the untrained jury would be charged with the task of evaluating psychologic factors not weighed or measured by the machine and understood only by trained operators.

The court concluded, therefore, that the trial court did not err in rejecting this evidence. The conviction, however, was set aside on other grounds and the case remanded for a new trial.

[In a specially concurring opinion three of the seven judges stated that on a retrial the results of the lie detector test made on the defendant, in the circumstances in this case, should be admitted in evidence if it were established that the operator was an expert in that field and that the apparatus used and the tests made thereunder had been given general scientific recognition as having efficacy. "That complicated and difficult questions may arise therefrom in the trial of cases should be no reason for the exclusion of such evidence. Modern court procedure must embrace recognized modern conditions of mechanics, psychology, sociology, medicine, or other sciences, philosophy, and history. The failure to do so will only serve to question the ability of courts to efficiently administer justice."] *—Boeche v. State, 37 N. W. (2d) 503 (Nebraska, 1949).*

Medical Motion Pictures

FILM REVIEWS

Kidney Function in Health and Kidney Function in Disease. Prepared in 1948 by Arthur C. Corcoran, M.D.; Don C. Hines, M.D., and Irvine H. Page, M.D. Produced by Mervin La Rue, Chicago. Sponsored by Lilly Laboratory for Clinical Research and procurable on loan from Medical Department, Eli Lilly and Company, Indianapolis 6.

Kidney Function in Health. 16 mm., color, sound, 1,386 feet, showing time thirty-eight minutes.

This film briefly describes the physiologic role of the kidneys, the principles of their function and, in detail, the activities of the nephron. After a description of blood flow through the glomerulus and the regulating mechanisms, the process of glomerular filtration is illustrated and discussed with respect to (1) the governing factors, (2) several renal function tests concerned with filtration, and (3) tubular function tests concerned with filtration. Tubular function is then illustrated by following the filtrate step by step through the tubules. The activities of the several sections of the tubule in altering the composition of the glomerular filtrate are made clear.

The film is unique and can be regarded as epoch making in educational medical pictures, since it does not attempt to teach the subject without the aid of accompanying lectures and laboratory experiments. Its objective is accomplished well; the film is a valuable adjunct to a course in physiology at the medical school level.

Renal function is too complex to be understood in one casual viewing. Each of the three parts of the film should be seen at least twice, with adequate discussion or lectures interposed between the showing of each part.

The film has its greatest value for second year students in medicine or at a time when the physiology of the kidney is discussed in the preclinical course in physiology. However, it has a definite value for advanced students in medicine, such as those taking courses in internal medicine in the clinical years, or for postgraduate students of medicine as refresher material. It also has a distinct advantage as an introduction to the companion film "Kidney Function in Disease." In this combination the film is valuable for showing to county or state medical society meetings or other groups at this level.

Kidney Function in Disease. 16 mm., color, sound, 1,672 feet, showing time forty-six minutes.

The first part of this film illustrates primarily the renal mechanism as one etiologic factor in hypertension. The effects of hypertension in the production of obliteration and sclerosis are contrasted with the process of proliferative interstitial fibrosis and tubular obstruction. The pathophysiology of acute, subacute and chronic glomerulonephritis is presented. The role of sodium retention and of hypoproteinemia in the formation of edema is illustrated. The syndrome of lower nephron nephrosis is presented with respect to both pathophysiology and therapy. A comparison is made of essential hypertension, glomerulonephritis and pyelonephritis with respect to differences in physiologic disturbances and clinical manifestations. The last part of this film is devoted for the most part to uremia and aberrations in acid-base balance in renal failure. Factors involved in prerenal azotemia and the treatment of electrolyte deficiency are illustrated. Finally, the therapy of essential hypertension is summarized effectively.

The three parts of the film depict practically the entire mechanism of renal disease in forty-five minutes. An enormous amount of factual material is most accurately and clearly presented. This is done for the greater part by the use of animated drawings. However, the film still attempts to cover too much ground in the allotted time. The narration is often too fast for proper mental perception, and the scenes change too rapidly for satisfactory visual appreciation.

Aside from the excessive speed, the pathophysiology of renal diseases is admirably presented in an exhaustive, concise and authoritative manner rarely attained in films on similar subjects. Except for the rather fast pace of this picture, the photography, animation and narration are excellent.

A 42 page booklet supplements these two motion pictures. It is beautifully illustrated with 45 color drawings of key scenes from the films. It also contains the narration, edited to be read instead of heard, and a relatively brief bibliography, with particular emphasis on original contributions for recent developments and comprehensive reviews for more settled phases.

Renal function is too complex a subject to be comprehended in detail at one sitting. Therefore, it is recommended that the films be seen several times, with study and discussion between showings. The booklet may be used as a focal point in such study and discussion, as an index to more extended reading and as a source of later review of the subject.

Shades of Gray (PMF 5047). 16 mm., black and white, sound (2 reels), showing time sixty-four minutes. Prepared in 1948 by and produced by the United States Army. Procurable on loan from the Army Surgeon of the Army area in which the request originates.

This motion picture begins with a series of strikingly accurate presentations of the various mental disorders which soldiers may experience during training and combat. The cases illustrate a range from mild anxiety states, obsessive-compulsive neuroses and "psychosomatic" disorders to severe depressive reactions and paranoid psychoses. In each instance the life patterns of the affected soldier are traced to his early familial and environmental settings and the sensitivities therein developed are skilfully correlated with the circumstances that precipitate his final breakdown. At this juncture the film makes the important point that in terms of "mental health" no one is either "white or black"; instead, every person is a "shade of gray" which corresponds to a complex summation of his capacities to adapt to a combination of stresses for which he is inadequately equipped or prepared. Other sections of the film present the procedures employed in psychologic selective service examination and allocation, the inculcation of group morale during training and combat and the organizational setup employed by the Army for the evacuation and treatment of neuropsychiatric casualties. Perhaps the best sequences are those on dynamic methods of military psychotherapy: interviews, emotional catharsis, narcoanalysis, hypnotic suggestion, group therapy and various other technics of physical, emotional and social rehabilitation designed to return the soldier to military service or to a satisfactory civilian readjustment.

Despite the optimism of the closing scenes, the film also brings home to the most hardened observer the incalculable cost in sheer human misery that modern war exacts even from those who survive it.

This film is highly recommended for medical and psychiatric teaching and to intelligent lay and military groups interested in what psychiatrists learned in the last war and what may be in store in a future war.

The film is uniformly excellent in photography, sound recording, direction and content.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

18:269-296 (April) 1949

Pulmonary Cripples. W. H. Blank.—p. 269.

Hydatidiform Mole and Associated Chorionic Lesions. T. M. Boulware, C. D. Howe and W. C. Friday.—p. 272.

Tick Paralysis: Discussion and Case Report. L. M. Bashinsky and S. C. Little.—p. 276.

American Heart Journal, St. Louis

37:481-688 (April) 1949

Possibility of Constructing an Einthoven Triangle for a Given Subject. F. N. Wilson, J. M. Bryant and F. D. Johnston.—p. 493.

*Surgical Treatment of Hypertensive Heart Disease and of Heart Failure of Hypertension. I. Chávez and L. Méndez.—p. 523.

*Coronary Vasodilator Action of Khellin. G. V. Anrep, M. R. Kenawy and G. S. Barsoum.—p. 531.

Further Studies of Circulation with Radioactive Erythrocytes. G. Nylin and S. Hedlund.—p. 543.

Complete Transposition of Aorta and Levoposition of Pulmonary Artery: Clinical, Physiologic and Pathologic Findings. H. B. Taussig and R. J. Bing.—p. 551.

Studies on Coronary Circulation: IV. Effect of Shock on Heart and Its Treatment. E. Corday, H. C. Bergman, Lois L. Schwartz and others. —p. 560.

Electrocardiographic Diagnosis of Disturbances of Heart's Venous Circulation. L. Unghváry.—p. 582.

Graphic Registration of Basal Diastolic Murmurs. B. G. Wells, M. B. Rappaport and H. B. Sprague.—p. 586.

Effects on Circulation of Smoking Cigarettes with Varying Nicotine Content. J. A. L. Mathers, M. C. Patterson and R. L. Levy.—p. 612.

Surgical Treatment in Hypertensive Heart Disease.—Chávez and Méndez point out that in the treatment of arterial hypertension by sympathetic denervation it has been assumed that hypertensive heart disease and especially heart failure contraindicated operative procedures. Patients with these handicaps are precisely the ones who most urgently need lowering of their blood pressure. At the Instituto Nacional de Cardiologia of Mexico operations have been performed on a number of hypertensive cardiac patients, all of whom were in heart failure, which in some was of extreme degree. Of the 11 patients operated on, 1 died from cerebral hemorrhage eleven days after operation; another succumbed the day after the operation from occlusion of the aqueduct of Sylvius, the result of an overlooked old meningitis; a third patient died in uremia ten months after operation. The other 8 patients improved and were still alive after one and one-half to three years and had shown no evidence of heart failure. Some of them had resumed normal life. Instead of being a contraindication, hypertensive heart disease is fundamentally an indication for surgical treatment as the only means of staying myocardial damage. Heart failure, when it is not accompanied by advanced lesions, may sometimes be corrected through the operative procedure, even in protracted cases in which digitalis and ouabain have failed.

Coronary Vasodilator Action of Khellin (Visammin).—Anrep and associates compare action of visammin (khellin, dimethoxy-methyl-furano chromone) with aminophylline on the coronary circulation and on smooth muscle of guinea pigs, on the heart-lung preparation and on the isolated rabbit heart. Khellin was clinically tried in 300 patients with coronary artery disease. The experimental observations show that khellin is a potent coronary vasodilator. Khellin has a prolonged action and remains in the circulation for many hours. Its action in dilating the coronary arteries was found to be at least four times stronger than that of aminophylline. Khellin can be used continuously in the treatment of angina pectoris and also for the relief of individual attacks of pain. It can be administered orally in doses of 50 to 100 mg. three times per day or as an intramuscular injection in doses of 100 to 200 mg. The drug produces a few side effects but is not toxic even after prolonged administration. It does not change the bleeding or coagulation time. Of 250 patients with angina pectoris treated with khellin, distinct improvement was noted in 140, moderate improvement in 85 and no effect in 25. The drug was given to 50 patients with recent coronary thrombosis to improve the collateral circulation and relieve associated anginal symptoms. The latter, at least, seemed to have been accomplished.

American Journal of Diseases of Children, Chicago

76:127-226 (Aug.) 1948

*Ovarian Tumors in Infants and in Children. M. E. Costin Jr. and R. L. J. Kennedy.—p. 127.

Use of Supplemented Milk for Infant Feeding. A. J. Vignec, Helen McNamara and H. L. Barnett.—p. 154.

Inhalation Therapy in Pediatrics. E. W. Black and H. G. Poncher. —p. 169.

Mother-Child ABO Incompatibility: Relation of Secretor Status to Mental Deficiency. H. Yannet and Rose Lieberman.—p. 176.

Vitamin A, Carotene and Ascorbic Acid Content of Nursery School Lunches. Virginia Lee Tompkins and Florence I. Scoular.—p. 184.

Possible Dissemination of Poliomyelitis Virus by Carriers. L. P. Gebhardt and J. D. Woodie.—p. 192.

Mechanism of Hyperbilirubinemia in Newborn Infant: Experimental Demonstration of Functional Hepatic Immaturity. Gladys J. Fashena. —p. 196.

Unilateral Multicystic Kidney in Infancy. W. E. Goodyear and D. E. Beard.—p. 203.

*Pseudohermaphroditism in Twins: Report of Tenth Case. T. W. Collier. —p. 208.

Ovarian Tumors in Children.—Costin and Kennedy report 22 cases of ovarian tumor in infants and children 14 years of age or younger in whom surgical treatment had been carried out at the Mayo Clinic during the past twenty-eight years. More than 200 cases of ovarian tumor in infants and children have been reported in the literature. In approximately one third of these the tumors were simple multilocular cysts, in one fourth dermoid cysts and in more than one third carcinoma or sarcoma. In recent years the diagnosis of sarcoma and carcinoma of the ovary in children has become much less frequent. Many of the tumors which were reported as sarcomas or carcinomas in the older literature were probably granulosa cell tumors or dysgerminomas. Simple cysts are relatively common ovarian tumors in infants and children. In this series of 22 cases, 7 were of simple cysts. Pain in the abdomen is the outstanding symptom, and torsion of the pedicle is a frequent complication. The latter occurred in 5 of the 7 cases. Simple cysts with a twisted pedicle are frequently confused clinically with appendicitis or appendical abscess. Cystadenoma of the ovary is rare in children. The 3 cases in this series were all in 14 year old children who had reached puberty. Cystadenocarcinoma of the ovary in children is correspondingly rare. Teratomas are the commonest ovarian tumor in children. In this series there were 10 cases. There were 7 cases of dermoid cysts and 3 of embryonic teratomas. The predominant symptoms are abdominal tumor and pain. Roentgenograms are useful in the preoperative diagnosis of dermoid cyst. The dermoid cyst type of teratoma is usually benign, but the embryonic type must be considered as potentially malignant. There was 1 case of dysgerminoma in this series. Dysgerminomas are unusual in that they are frequently associated with pseudohermaphroditism or genital hypoplasia. It is safest to consider them as malignant tumors and to treat them as such. There was 1 case of granulosa cell tumor; it is a rare cause of sexual precocity in children and must be considered in the differential diagnosis of this condition. The incidence of malignant granulosa cell tumor in children is low.

Pseudohermaphroditism in Twins.—The case of pseudohermaphroditism in twins described by Collier is the tenth such case recorded in the literature. The twins were born in March 1947, were living at the time this report was written and were classified as pseudohermaphrodites of the female external type. It is not possible to go beyond an anatomic study in infancy, but early diagnosis and plastic work is desirable. Surgical treatment should be done at preschool age or, certainly, in the prepubertal period. Observation of the structural development and pregnandiol excretion may be supplemented by urethroscopic examinations, pneumoperitoneum and, if indicated, laparotomy, to determine the degree of sexual aberration present.

American Journal of Ophthalmology, Chicago

32:487-624 (April) 1949

New Approach to Some Problems of Retinal Vascular Disease. J. S. Friedenwald.—p. 487.
Use of Tantalum Implants for Inducing Permanent Hypotony in Rabbits' Eyes. M. U. Troncoso.—p. 499.
Investigation of Blood-Aqueous Barrier in Newborn: II. To Inulin. V. E. Kinsey and M. B. Williamson.—p. 509.
Harada's Disease. Mary G. Bruno and S. D. McPherson Jr.—p. 513.
Ocular Cysticercosis. L. Junior.—p. 523.
Apparent Rotation of Fixed Target Associated with Linear Acceleration in Flight. B. Clark and A. Graybiel.—p. 549.
Spastic Entropion Correction: Wheeler's Orbicularis Advancement. M. P. Motto and R. L. Alexander.—p. 557.
Higher Refractional Anomalies: Their Frequency in Different Groups and Countries. E. Schmerl.—p. 561.
Ocular Myasthenia Gravis: Report of 2 Cases. J. V. Lisman.—p. 565.

American Journal of Public Health, New York

39:433-576 (April) 1949. Partial Index

*Some Public Health Problems in Nuclear Fission Operations. A. E. Gorman and A. Wolman.—p. 443.
Housing and Health: Sanitary Aspects of the Dwelling. M. A. Pond. —p. 454.
Id.: Appraisal of Substandard Housing. E. A. Tiboni.—p. 459.
Id.: Provision of Good Housing. Catherine Bauer.—p. 462.
Id.: Planned Community. F. J. Adams.—p. 467.
Q Fever: History and Present Status. R. E. Dyer.—p. 471.
Id.: Experimental Q Fever in Cattle. E. J. Bell, R. R. Parker and H. G. Stoenner.—p. 478.
Id.: Q Fever Survey in Southwest Texas. J. V. Irons, J. N. Murphy Jr., A. B. Rich and A. E. Hill.—p. 485.
Id.: Complement-Fixing Antibodies with C. Burnetii Antigens in Various Geographic Areas and Occupational Groups in the United States. E. Strauss and S. E. Sulkin.—p. 492.
Epidemiology of Accidents. J. E. Gordon.—p. 504.

Public Health Problems in Nuclear Fission.—Gorman and Wolman discuss problems of environmental and industrial sanitation which exist in the atomic energy industry, pointing out that the Atomic Energy Commission is striving to counteract the objectionable or hazardous conditions at and in the vicinity of the plants in which nuclear fission is carried out. A great deal of work has been carried out and is in progress for resolving the problem of protecting man and his environment against radioactivity. The authors mention meteorologic research to determine the most favorable atmospheric conditions under which to carry out operations, studies on surface and subsurface contamination of water supplies and research on waste disposal. The importance of training sanitary engineers in these problems is emphasized.

American Journal of Tropical Medicine, Baltimore

29:173-268 (March) 1949. Partial Index

Mel B in Treatment of Human Trypanosomiasis. E. A. H. Friedheim. —p. 173.
Active Form of Tryparsamide, TPB, in Treatment of Human Trypanosomiasis. E. A. H. Friedheim.—p. 181.
*Five Day Peroral Treatment of Yaws with STB, New Trivalent Arsenical. E. A. H. Friedheim.—p. 185.
Viability of E. Histolytica Cysts in Soil. P. C. Beaver and G. Deschamps.—p. 189.
Effect of Acetic Acid on Viability of Endamoeba Histolytica Cysts. P. C. Beaver and G. Deschamps.—p. 193.
Note on Apparent Antagonism of Bacterial Intoxication to Plasmodial Infection. M. F. Boyd and F. D. Coelho.—p. 199.
Southwest Pacific Vivax Malaria: Clinical Features and Observations Concerning Duration of Clinical Activity. E. Hill and D. S. Amatuzio. —p. 203.
Potential Vectors of Japanese Encephalitis in Caroline Islands. H. S. Hurlbut and J. I. Thomas.—p. 215.
Report on Presence of Japanese B Encephalitis Neutralizing Antibody Among Filipinos and Certain Philippine Animals. E. S. Salafranca and L. Espiritu.—p. 219.
Preparation and Testing of Specific Antigen for Diagnosis of Human Strongyloidiasis. Mary Jane Crump Brannon and E. C. Faust. —p. 229.
Action of Some Alkylhydroxybenzenes on Pig Ascaris In Vitro. W. J. Williams, V. Schelling and F. W. Hartman.—p. 241.

Five Day Peroral Treatment of Yaws.—Friedheim points out that the treatment of yaws in individual cases does not present a problem, since penicillin, arsenicals and any one of the numerous bismuth preparations may achieve a cure. Problems arise in connection with mass treatment in the tropics, particularly in the West African bush, where the incidence of yaws reaches 75 per cent and hundreds of thousands of persons with yaws are scattered over huge territories. Peroral application seems the optimum method for mass treatment under the aforementioned conditions. A relatively nontoxic and stable form of 4-oxy-3-acetylaminophenylarsenoxide, i.e., the trivalent derivative of acetarsone, "STB," approaches closely the characteristics desirable for mass treatment in undeveloped territories. Clinical tests have been carried out in the mountainous forest regions of French Guinea. Eighty-eight subjects presenting definite classic yaws lesions, in 73 of the infectious and 15 of the noninfectious type, were chosen for the study. The cases of infectious disease included those with primary and secondary lesions. The treatment consisted of a single oral daily dose of 0.01 to 0.02 Gm. per kilogram of body weight on five consecutive days. Control examinations were made three months after treatment. The treatment brought about cicatrization in all 73 cases of infectious yaws and in 14 out of 15 cases of "crab yaws." No untoward effects occurred. The five day oral treatment of yaws seems to be appropriate for mass treatment in tropical countries.

Annals of Allergy, Minneapolis

7:155-300 (March-April) 1949. Partial Index

Treatment of Headache, with Particular Reference to Use of Cafergone (Ergotamine Tartrate and Caffeine) for Relief of Attacks. F. K. Hansel.—p. 155.
Immediate Urticarial Reactions to Intradermal Injections of Bacterial Antigens: Preliminary Report. B. Kraft, M. H. Mothersill and R. H. Nestmann.—p. 162.
*Immunity to Diphtheria Induced by Booster Dose of Alcohol-Refined, Alum-Precipitated Toxoids: Based on Study of Fifty-Nine Allergic Children. H. G. Rapaport and M. M. Peshkin.—p. 165.
Improved Tissue Culture Technic Adaptable to Clinical Testing for Bacterial Hypersensitivity of Tuberculin Type. H. Blatt, F. A. Nantz and Jeanne M. Rehm.—p. 170.
Origin of Patterns of Allergic Sensitization. R. P. Wodehouse.—p. 172.
Experimental Study of Effect of Alcohol and Alcoholic Beverages on Allergic Reactions. Susan C. Dees.—p. 185.
Role of Allergy in Rheumatoid Arthritis and Suggested Treatment: Preliminary Report. G. E. Rockwell.—p. 195.
Therapeutic Effects of Certain Antihistamine Drugs in Allergic Conditions: Comparative Study. H. L. Harris.—p. 206.
Spontaneous Rib Fracture in Bronchial Asthma. M. L. Gelfand.—p. 217.
Studies of Drug Sensitivity. O. C. Hansen-Pruss.—p. 219.
*Oral Pollen Absorption: Demonstrated by Controlled Passive Transfer Tests. T. M. Feinblatt and R. Love.—p. 228.
Nature of Benadryl Activity and Its Clinical Applications. T. H. McGavack.—p. 232.
Role of Streptococci in Bronchial Asthma: Etiologic Significance and Treatment with Streptococcus Filtrates. H. A. Heise.—p. 240.
Effect of Substitution of Antistine (Phenyl-Benzyl-Amino-Methyl-Imidazoline) for Benadryl or Pyribenzamine During Height of Ragweed Pollen Season. B. Dickstein.—p. 250.
Benadryl: Intravenous Use in Allergy. B. Zolov.—p. 254.
Allergy as Cause of Mulberry Hypertrophy of Inferior Turbinate. L. J. Wallner.—p. 258.

Immunity to Diphtheria.—Rapaport and Peshkin treated 59 allergic children, whose average age was 13, by injection of a booster dose of 0.5 cc. of alcohol-refined, alum-precipitated toxoids. In 34 of these combined diphtheria and tetanus toxoids were used and in 25 diphtherial toxoid alone. All of these children had been primarily immunized against diphtheria in early childhood, and the majority of them subsequently received one or more doses of the commonly employed diphtherial toxoids. Pillemer's new method of alcohol refinement and purification practically eliminated the allergenic fractions from the toxoids without disturbing its high antigenic potency. One week to four months after the booster injection had been given, the blood was tested in the 59 children one or more times, and the diphtherial antitoxin titer revealed that this new refined toxoid caused a rise in antitoxin as high as 128 units or more per cubic centimeter of blood. The rise in titer occurred in all the children and was 4 to 640 times, or an average of 123 times, above the corresponding antitoxin level obtained prior to the booster injection of toxoid. The maximum antitoxin titer ranged from 0.1 unit to 128 units per cubic centimeter of blood and in the majority of patients occurred two months after the booster dose had been given. Negligible local reactions occurred at the site of the injection in 5 children. No child experienced an elevation of temperature or an allergic reaction after the booster injection of alcohol-refined, alum-precipitated toxoid. The alcohol-refined, alum-precipitated diphtherial toxoid, alone or co bined with tetanus toxoid, can be currently regarded as the most ideal and reliable preparation for immunization against diphtheria.

Oral Pollen Absorption.—Feinblatt and Love injected serums from ragweed-sensitive donors and from summer-grasses-sensitive donors intracutaneously into the right and left arms, respectively, of 52 persons, 40 women and 12 men between the ages of 17 and 72 who were not sensitive to ragweeds or lawn grasses and therefore were selected as passive transfer subjects. They were divided into two groups; twenty-four hours after injection of the donor serum one group received 3 capsules of processed mixed ragweed, lawn grasses and common pollens (30 mg. in each capsule—a total of 90 mg. on a fasting stomach by mouth); the other group received 1,000 pollen units of commercially produced antigen by parenteral route. Twenty-five of the 52 persons had positive passive transfer reactions either to subcutaneous injections of 1,000 pollen units or to oral ingestion of 3 processed pollen tablets or both. Of the 25 who showed positive transfer reactions, 21 showed passive transfer reactions following the ingestion of the processed oral pollen antigen. The average time required for the development of the greatest response was 2.6 hours. Following injection of the commercially produced antigen, 20 of these persons showed positive transfer reaction. Development of the greatest reaction required an average of 2.6 hours. Control passive transfer tests thus demonstrated effective absorption by mouth of processed pollen antigens. Results suggest that the antigen response depends on a mechanism which is independent of the route of introduction of the antigen.

Archives of Dermatology and Syphilology, Chicago

59:127-250 (Feb.) 1949

Cutaneous Manifestations of Some Tropical Diseases. H. Fox.—p. 127.
Eczematous and Pustular Eruptions of Hands. M. H. Samitz.—p. 145.
Necrobiosis Lipoidica (Diabeticorum?): Histologic Study and Comparison with Granuloma Annulare. C. W. Laymon and I. Fisher.—p. 150.
Large Spores (Macroconidia, Fuseaux) of Microsporum Canis in Vivo: Report of 2 Cases. B. Appel and H. B. Ansell.—p. 168.
Human Infestation with Scabies of Monkeys. L. Goldman and M. D. Feldman.—p. 175.
Keratosis (Seborrheic and Senile). W. Sachs, G. M. MacKee and P. M. Sachs.—p. 179.
Pityriasis Versicolor: Atypical Clinical and Mycologic Variations. F. E. Bumgarner and Ruth C. Burke.—p. 192.
Dermatomyositis: Report of 3 Cases with Postmortem Observations. C. K. Wainger and W. F. Lever.—p. 196.
Inflammatory Ringworm Due to Trichophyton Faviforme: Report of 17 Cases. R. G. Carney.—p. 209.
Reiter's Syndrome with Keratotic Dermatitis: Report of Case. J. H. Peters.—p. 217.
Unusual Reactions to Intravenous Injections of Typhoid Vaccine. E. W. Thomas, M. Schur and M. Tye.—p. 230.

Archives of Internal Medicine, Chicago

83:1-118 (Jan.) 1949

Pathogenesis of So-Called Diffuse Vascular or Collagen Disease. K. Yardumian and J. Kleinerman.—p. 1.
Reaction of Body to Poliomyelitis and Recovery Process. A. C. Guyton.—p. 27.
Effects of Salicylates and Benadryl on Experimental Anaphylactic Hypersensitive Vascular and Cardiac Lesions. R. C. Roberts, K. A. Crockett and T. C. Laipply.—p. 48.
Hemosiderosis in Refractory Anemia. J. P. Wyatt and H. Goldenberg.—p. 67.
Syphilis: Review of Recent Literature. H. A. Tucker, C. F. Mohr, R. D. Hahn and J. E. Moore.—p. 77.

Archives of Ophthalmology, Chicago

41:125-252 (Feb.) 1949

*Role of Inheritance on Glaucoma. A. Posner and A. Schlossman.—p. 125.
Experimental Studies of Inclusion Blennorrhea: Isolation of Virus. A. E. Braley.—p. 151.
Use of Phenylephrine Hydrochloride (Neo-Synephrine Hydrochloride®) in Ophthalmology. P. Heath and C. W. Geiter.—p. 172.
Juxtapapillary Hemangioendothelioma of Retina: Report of Case. B. F. Souders.—p. 178.
Scleromalacia Perforans: Report of Case. M. Harbater.—p. 183.
*Congenital Ptosis: Classification of 200 Cases. R. N. Berke.—p. 188.
Intraorbital Tumors. A. W. Forrest.—p. 198.

Role of Inheritance in Glaucoma.—In the course of a study of 373 cases of primary glaucoma, Posner and Schlossman were impressed by the high incidence of the disease in patients displaying familial tendencies. Fifty-one patients had one or more relatives affected with the disease. A new approach is needed to the study of the role of inheritance in glaucoma, especially in the light of more recent advances in genetics. While this paper represents a limited experience, pooling of similar studies will supply enough data for a more adequate investigation of this genetic problem. Correlations made in the preparation of this survey suggested the possibility of using the hereditary group as a starting point for the investigation of some of the more elusive problems in glaucoma, such as (1) the preglaucomatous state, (2) the possibility of predicting the probable severity of the disease and (3) the relation between glaucoma and certain constitutional diseases. The 51 patients belonged to 30 different families. The authors present brief histories of these families and discuss the mechanisms of heredity. They found that in most families the disease follows a similar course in the various affected members. All the pedigrees show dominant heredity, except for 1, in which it may be recessive. Some sporadic cases may, on careful analysis, prove to be hereditary. The genetic approach may be an aid in the early recognition of glaucoma and in the study of the preclinical and mild phases of the disease.

Congenital Ptosis.—The classification of ptosis by Berke is based on a personal survey of the hospital records of 200 consecutive cases observed at the Institute of Ophthalmology, Presbyterian Hospital of New York City, during the past fifteen years. Normal superior rectus muscles were observed in 147 of the 200 cases, weakness of the homolateral superior rectus alone or combined with weakness of the homolateral inferior oblique in 34, the jaw-winking phenomenon of Marcus Gunn in 12 and ptosis associated with blepharophimosis in 7. Of the 200 cases the ptosis was unilateral in 145 and bilateral in 55, simple in 147 and complicated by horizontal or vertical anomalies in 53. In 107 of the 200 cases, sufficient action of the levator muscle existed to justify resection of the muscle as the operation of choice, while in 93 cases there was no such function and the patients were candidates for some modification of the Motais-Parinaud operation or for the frontalis type of procedure. This classification of congenital ptosis is useful, in that it shows the complicated nature of ptosis and, at the same time, is helpful in selecting the proper surgical procedure. It also gives the surgeon some idea of what to expect cosmetically and functionally from operations for the various types of congenital ptosis. In the hands of experienced surgeons inadequate cosmetic and functional correction of ptosis depends on the inherent complicated nature of the ptosis rather than on faulty judgment or technic.

Archives of Otolaryngology, Chicago

48:263-378 (Sept.) 1948

Stapes, Fissula Ante Fenestram and Associated Structures in Man: V. From Fetus of 160 Mm. (Five Months) to Newborn Infant. B. J. Anson and E. W. Cauldwell.—p. 263.
Benign Cysts of Superior Maxilla with Special Reference to Cysts of Maxillary Sinus: Clinicopathologic Study of 30 Cases. L. R. House.—p. 301.
Glycerite of Hydrogen Peroxide with Urea: III. Comparison by In Vitro Methods of Its Bacteriotoxic Action with That of Three Proprietary Aural Preparations. E. A. Brown, W. Krabek and Rita Skiffington.—p. 327.
Penicillin-Sulfanilamide Filling and Primary Suture in Simple Mastoidectomy. M. O. Abdeen.—p. 332.
Necrosis Within Pterygopalatine Fossa: Operation and Recovery. N. A. Fischer and A. J. Fischer.—p. 337.
Nasal Fractures: Analysis of One Hundred Cases. O. J. Becker.—p. 344.

Blood, New York

4:301-402 (April) 1949

Experimental Production of Nutritional Macrocytic Anemia in Swine. G. E. Cartwright, B. Tatting, H. Ashenbrucker and M. M. Wintrobe.—p. 301.
Use of Replacement Transfusion in Diseases Other Than Hemolytic Disease of Newborn. M. Bessis.—p. 324.
*Nitrogen Mustard Therapy in Hodgkin's Disease: Analysis of Fifty Consecutive Cases. W. Dameshek, L. Weisfuse and T. Stein.—p. 338.
Preparation of Stabilized Solutions of Hemoglobin. R. B. Pennell and W. E. Smith.—p. 380.
Effect of Cobalt on Oxygen Capacity and Methemoglobin Content of *Blood. M. C. Bucciero and J. M. Orten.—p. 395.*

Nitrogen Mustard in Hodgkin's Disease.—According to Dameshek and associates the most widely used nitrogen mustard is methyl bis (beta-chlorethyl) amine, subsequently abbreviated as HN_2. In tris (beta-chloroethyl) amine, or HN_3, the methyl group is replaced by a third chloroethyl group. This report deals with the effects of nitrogen mustard in the authors' first 50 cases of Hodgkin's disease. They found it to be useful particularly in severe cases with constitutional symptoms and visceral involvement. In these cases a period of complete rehabilitation and a definite increase in life span of from two months to two years may follow the use of one or several courses of methyl bis (beta-chloroethyl) amine hydrochloride. This substance appears to have an almost specific affinity for the abnormal tissues of Hodgkin's disease. Its effects resemble closely those of roentgen radiation. It is often effective in producing complete remission in cases completely refractory to roentgen therapy. Radiosensitivity may return after a course of nitrogen mustard therapy. In involvement of the spinal cord or peripheral nerves, the compound is far more effective, particularly in pain relief, than is roentgen ray. Methyl bis (beta-chloroethyl) amine hydrochloride is likewise more effective in bringing about relief of fever and severe generalized itching than is roentgen radiation. Irradiation is the treatment of choice in relatively early cases of Hodgkin's disease, primarily because longer remissions can be obtained than with nitrogen mustard. The combined use of nitrogen mustard and roentgen rays may be the best treatment. Doses of methyl bis (beta-chloroethyl) amine hydrochloride somewhat smaller than the generally recommended 0.1 mg. per kilogram of body weight are usually effective and less likely to produce secondary effects such as granulocytopenia, which can usually be prevented by administration of penicillin. The only definite contraindication to the use of the nitrogen mustard is the presence of jaundice. Although cure of Hodgkin's disease cannot be expected, the remissions which are produced offer great comfort to the patient.

California Medicine, San Francisco

70:235-378 (April) 1949

*Use of Radioactive Iodine in Treatment of Graves' Disease. M. Prinzmetal, C. M. Agress, H. C. Bergman and B. Simkin.—p. 235.
Diagnosis of Intestinal Obstruction in the Newborn: Review of Literature with Report of Eight Additional Cases. E. Carlson, A. G. Clark and P. M. Walstad.—p. 240.
Hemolytic Anemias: Recent Advances in Diagnosis and Treatment. R. S. Evans and Rose Duane.—p. 244.
Median Nerve Injuries in Fractures in Region of the Wrist. N. Meadoff. —p. 252.
Rheumatoid (Marie-Strumpell) Spondylitis: Technic of Examination and Importance of Costal Joints. A. J. Williams.—p. 257.
Problems of General Practice in Rural California. H. L. Carey and C. B. Andrews.—p. 262.
Place and Training of the General Practitioner. W. Darley.—p. 265.
Spontaneous Pneumoperitoneum. W. L. Stilson and O. J. Neufeld. —p. 269.
Operation for Congenital Cataract. O. Barkan.—p. 274.
Pediatric Anesthesia. M. D. Leigh.—p. 278.
*End Results of Thoracolumbar Sympathectomy for Advanced Essential Hypertension. J. W. Hinton.—p. 282.
Otitis Externa. C. W. Rees.—p. 288.
Observations on Difficulties Encountered in Serological Diagnosis of Brucellosis and Q Fever. K. F. Meyer and B. Eddie.—p. 292.
Prescription for Light Work for Partially Disabled Employee. C. Leggo. —p. 294.
Cancer of Cervix. H. F. Traut.—p. 297.

Radioactive Iodine in Hyperthyroidism.—Prinzmetal and co-workers treated 50 patients with uncomplicated hyperthyroidism with radioactive iodine (I ^{131}). Twenty-six patients were followed for one year or longer. Euthyroidism was restored in 25, and 1 patient was greatly improved. The total dose of radioiodine administered varied from 0.5 to 10 millicuries, averaging 4.4 millicuries. The average length of time required for return to a euthyroid state was three to four months. Hypometabolism developed in 3 patients, and 1 patient presented signs and symptoms of myxedema. No other complications ensued. One patient who apparently relapsed responded again after readministration of radioiodine. The uptake of I ^{131} before treatment ranged from 31.7 to 100 per cent, with an average of 62.4 per cent, and after treatment ranged from 1.5 to 76.0 per cent, averaging 27.3 per cent. The determination of the uptake of radioiodine by the thyroid gland is a useful diagnostic procedure in the differentiation of conditions simulating hyperthyroidism. The thyroid gland decreased in size after treatment with radioactive iodine; the uptake of iodine by the gland was reduced, and the level of organic iodine in the plasma was restored to normal. In 4 cases of acute thyroiditis, in spite of a high basal metabolic rate, a high content of organic iodine in the plasma and other evidences of "hyperthyroidism" the uptake of I ^{131} was very low. Radioactive iodine appears to be an effective therapeutic agent in the management of patients with thyrotoxicosis. It is not recommended for nodular goiters.

Thoracolumbar Sympathectomy.—Hinton performed thoracolumbar sympathectomy in 473 patients, 185 men and 288 women, 72 of them between the ages of 50 and 59, for essential hypertension during the six year period February 1942 to February 1948. Most of the patients had advanced stages of hypertensive disease. Patients were selected for operation on the basis of evaluation of the degree of damage in the brain, eye, kidney and heart. The total number of deaths in and out of the hospital in this period was 79, or a total mortality rate of 16 per cent. There were 38 in-hospital deaths, or a mortality rate of 8 per cent. The causes of death occurring in the hospital were, in order, as follows: cerebral accident, cardiac failure and renal insufficiency. The out-of-hospital deaths were, in order, as follows: cardiac failure, cerebral accident and renal insufficiency. Operations done early in the series in approximately 150 cases followed the Smithwick procedure including nine thoracic ganglions through the second lumbar ganglion with removal of the greater, lesser and least splanchnic nerves, but later the minimal operative procedure included the third thoracic ganglion through the third lumbar ganglion with all the splanchnic nerves. In addition, 40 total sympathectomies were performed which included the stellate ganglion. Results from the most extensive operation were better than those from the lesser procedure, but the mortality rate was also greater. Conclusion that complete or nearly complete sympathectomy is preferable to a less extensive procedure must await the collection of more data which can be used in weighing the respective end results against the mortality. Thoracolumbar sympathectomy has a definite place in the treatment of hypertensive vascular disease, but in advanced disease it is chiefly palliative.

Cincinnati Journal of Medicine

30:117-180 (March) 1949

Acute Respiratory Infections: Contributions Made During World War II. J. H. Dingle.—p. 117.
Advances in Treatment of Diseases of Chest. A. L. Barach.—p. 131.
Fluid Therapy in Acute Illness of Infancy and Childhood. Katharine Dodd and S. Rapoport.—p. 135.

30:181-242 (April) 1949

Socio-Economic Problems Confronting Medicine. P. R. Hawley.—p. 181.
Therapeutic Use of Artificially Prepared Radioactive Isotopes. C. V. Moore.—p. 192.
Application of Respiratory Physiology in Treatment of Respiratory Diseases. R. T. Thompson.—p. 194.

Diseases of Chest, Chicago

15:377-506 (April) 1949

*Surgical Treatment of Mitral Stenosis (Mitral Commissurotomy). C. P. Bailey.—p. 377.
Importance of Continued Studies in Tuberculosis. H. L. Mantz.—p. 398.
Early Diagnosis as Means of Tuberculosis Control. E. D. Rames. —p. 404.
*Diagnosis of Cancer of Lung by Cytologic Method. G. N. Papanicolaou and H. A. Cromwell.—p. 412.
One-Half Gram of Streptomycin in Treatment of Pulmonary and Extrapulmonary Tuberculosis: Report of 120 Cases. R. W. Dickman. —p. 422.
Streptomycin in Tuberculosis of Larynx. B. Margulies.—p. 432.
Aerosol Antibiotic Therapy in Suppurative Diseases of Lung and Bronchi. B. P. Potter.—p. 436.
Bronchogenic Carcinoma. D. D. Feld and V. O'Malley.—p. 450.
Pathogenesis of Pulmonary Atelectasis. R. Viswanathan.—p. 460.
Lipoid Pneumonia in Neuropsychiatric and Debilitated Patients. A. A. Humphrey and E. G. Olmstead.—p. 471.
Mediastinal Tumors and Cysts. J. V. Thompson.—p. 480.

Surgical Treatment of Mitral Stenosis.—In mitral stenosis, which is usually due to rheumatic fever, the valve cusps become thickened, shortened and fibrotic. The cusps appear to fuse at the commissures, so that the opening becomes a slit in a thickened, fibrotic placque, through which regurgitation occurs. Localized involvement may obstruct two thirds of the normal valve opening and thus be responsible for the stenosis of an otherwise not too distorted valve. It occurred to Bailey to cut such a placque completely in two by two incisions at the commissures of the valve opening, so that the two halves of the placque could separate freely, being hinged by soft valvular tissue at either extremity. He presents histories of patients who were subjected to the surgical treatment. One of these survived and showed a gratifying result. Another patient could have survived if the author had known then what he learned since. The disease in the third patient probably was too advanced for help. In 2 other patients surgical treatment was started but could not be completed. The author believes that the mitral valve is best approached through the left auricular appendage by an anterolateral approach. Accurate surgical maneuvers depend on control by vision or digital palpation. Commissurotomy should be limited to patients with single valve lesions without rheumatic activity. Commissurotomy seems preferable to a shunt operation (azygos-pulmonary vein anastomosis or opening of the interauricular septum). Preoperative digitalization, quinidinization and the intravenous use of procaine during intervention are valuable in supporting cardiac function and in preventing arrhythmia. Antibiotics are given to prevent infection. Recently 5 additional patients were operated on. Two of these were well at the time of reporting; 1 died two and a half months after operation; 1 died as the result of an error in technic at operation (cutting across a valve leaflet), and 1 was getting along well for six days but died suddenly of a cerebral arterial embolus.

Cytologic Method in Diagnosis of Cancer of Lung.—Papanicolaou and Cromwell say that the fixation and staining method in the study of sputum for cancer cells was first used by them in June 1945. Since that date 1,300 cases have been studied. The accuracy was approximately 95 per cent for the positive reports and 85 per cent for the negative results. The method helps in the diagnosis of cases of obscure disease. In some instances in which bronchoscopic examination and aspiration biopsy gave negative results and the results of roentgen examination were inconclusive, a positive sputum revealed the true nature of the lesion. The method aids in the earlier diagnosis of pulmonary neoplasm. It is of value for screening purposes in cancer detection clinics. It tends to accelerate the diagnosis and to increase the percentage of operable lesions. It is particularly useful in establishing a diagnosis of carcinoma of the superior sulcus, so-called Pancoast's tumor. Tumors in this part of the lung are inaccessible to the bronchoscope. When roentgen findings are meager, bronchial washings from both right and left main bronchi may decide the issue. Because of the technical simplicity and low cost of the method, repeated specimens can be obtained, making it particularly advantageous in postoperative and postirradiation follow-up.

Florida Medical Association Journal, Jacksonville

35:601-668 (April) 1949

Laryngofissure and Laryngectomy in Treatment of Intrinsic Carcinoma of Larynx. J. B. Farrior.—p. 619.
Type of Anesthesia in Herniorrhaphy with Reference to the Aged. J. L. Selden Jr.—p. 622.
Plan of Conservative Management of Antepartum Eclampsia. S. L. Watson Jr.—p. 626.
General Principles in Treatment of Tuberculosis. R. D. Thompson.—p. 630.
Progress in Public Health in Florida. W. T. Sowder.—p. 635.
Amebiasis and the Proctologist. R. F. Allen.—p. 640.

Indiana State Medical Assn. Journal, Indianapolis

42:185-300 (March) 1949

Role of Analgesia and Anesthesia in Production of Asphyxia Neonatorum. D. M. Little Jr. and R. M. Tovell.—p. 201.
Why Malaria Cures General Paralysis. W. L. Bruetsch.—p. 211.
Treatment of Supracondylar Fracture of Humerus. J. C. Donchess.—p. 217.
Electrocardiogram in Acute Pericarditis: Comparison of Cases With and Without Effusion into Pericardial Sac. R. M. Nay.—p. 222.

42:301-398 (April) 1949

Malignant Melanoma: Discussion of 65 Pathologically Proven Cases. N. D. Ewing.—p. 317.
Symptoms and Prompt Diagnosis of Tumors of Genito-Urinary Organs. A. L. Dean.—p. 321.
Rational Therapy of Carcinoma of Cervix. J. L. Loudermilk.—p. 327.
Problem of Carcinoma of Breast. R. R. Buchholz.—p. 332.
Lesions of Colon. H. Acuff.—p. 335.

Iowa State Medical Society Journal, Des Moines

39:100-138 (March) 1949

Chronic Intestinal Insufficiency (Celiac Disease) in Children. C. D. May.—p. 100.
Acute Diarrhea in Children. I. H. Borts.—p. 103.
Immunization Procedures Brought Up to Date. J. E. Dyson.—p. 105.
Bandl's Ring: Report of Case. D. C. Sharpe.—p. 107.
General Practitioner in This Era of Specialization. M. J. Carey.—p. 110.

39:139-186 (April) 1949

Electrocardiographic Changes Associated with Myocardial Infarction. L. E. January.—p. 142.
*Anticoagulants in Treatment of Acute Myocardial Infarction and Its Complications. W. B. Bean.—p. 149.
Congenital Malformations of Heart and Great Vessels: Diagnosis and Treatment. J. L. Ehrenhaft.—p. 153.

Anticoagulants in Myocardial Infarction.—Bean lists the considerations which form the basis of the use of anticoagulant compounds in the treatment of patients with acute myocardial infarction. Anticoagulant therapy has been shown to reduce the incidence and severity of thromboembolic accidents following in the wake of acute infarction of the heart. The mortality rate has been reduced significantly in controlled studies. Treatment should be instituted at the time the patient is first seen or within two weeks of the onset of acute myocardial infarction and continued four weeks after the attack. Anticoagulant treatment is dangerous and should never be used unless there is a daily check on blood prothrombin levels by competent laboratory personnel. The patient must be hospitalized. For early cases, dicumarol® alone is effective, but, since there is a one or two day delay in obtaining full effect, heparin may be used for its rapid effect. There is some risk of hemorrhage, even with meticulous laboratory control, but it is minor in comparison with the gains from prevention of thromboembolism. Anticoagulants are not contraindicated unless a hemorrhagic state exists. The conventional forms of therapy must not be suspended because of anticoagulant therapy.

Journal of Clin. Endocrinology, Springfield, Ill.

9:213-300 (March) 1949

Antihormone Formation Complicating Pituitary Gonadotropin Therapy in Infertile Men: I. Properties of Antihormones. W. O. Maddock.—p. 213.
Pregnandiol Precipitation Test: Further Observations on Clinical Applications and Technic. H. C. Mack, A. E. Parks and M. McDonald.—p. 234.
Carbohydrate Metabolism in Combination of Diabetes Mellitus and Addison's Disease, as Illustrated by Case. J. H. Crampton, S. T. Scudder and C. D. Davis.—p. 245.
Corticoadrenal Tumor with Hypoglycemic Syndrome, Goiter, Gynecomastia and Hepatosplenomegaly. J. J. Staffieri, O. Cames and J. M. Cid.—p. 255.
Urinary Excretion of Chorionic Gonadotropin by Human Females Following Parenteral Administration of Aqueous or Beeswax Solutions. C. W. Lloyd, E. C. Hughes, M. L. Eva and J. Lobotsky.—p. 268.
*Results of Prolonged Medical Treatment of Obesity with Diet Alone, Diet and Thyroid Preparations, and Diet and Amphetamine. D. Adlersberg and M. E. Mayer.—p. 275.
Utero-Tubal Persufflation Curve in Myxedema: Effect of Thyroid Therapy. J. C. Mussio Fournier and A. Pou de Santiago.—p. 285.

Treatment of Obesity.—Adlersberg and Mayer report treatment of obesity under controlled conditions in the nutrition clinic of a large general hospital during an observation period of five and one-half years. The study included 299 patients, 27 men and 272 women. Moderate uncomplicated hypertension without evidence of heart failure was present in about 25 per cent of the group. In group A, in which only low caloric diets were employed, the average weight loss increased in proportion with the degree of obesity. Diet alone resulted in better weight reduction than diet plus thyroid medication (group B), whereas diet plus amphetamine therapy (group C) showed somewhat better results than diet alone. Amphetamine sulfate reduced the appetite, but this effect often faded with continued administration of the drug, so that with the same dosage of amphetamine increased food intake and weight gain resulted. To avoid this, the dose of amphetamine had to be gradually raised. In some persons addiction to amphetamine developed. Two instances of amphetamine poisoning were observed in psychoneurotic patients who had refilled the prescription for amphetamine sulfate on many occasions and had raised the dose to toxic levels. Although no serious complications resulted in these cases, amphetamine may cause poisoning by accident or by uncritical use. Regardless of the form of therapy employed, best results were obtained in the first two months of treatment. In the later stages of treatment amphetamine proved to be superior to thyroid. Long term results with diet alone compared favorably with those obtained with diet and amphetamine. Short term effects should be strictly separated from the long range results in studies on weight reduction, since the immediate success is usually much better than the ultimate result.

Journal of Clinical Investigation, Cincinnati

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Behavior of Radioiodine in Blood. W. M. McConahey, F. R. Keating Jr. and Marschelle H. Power.—p. 191.
Induced Insulin Resistance in Rabbit. F. C. Lowell and W. Franklin. —p. 199.
Relative Measurement In Vivo of Accumulation of Radioiodine by Human Thyroid Gland: Comparison with Radioactivity in Peripheral Tissues. T. J. Luellen, F. R. Keating Jr., M. M. D. Williams and others. —p. 207.
Validity of Electrokymographic Method for Measurement of Diameter Change of Aorta and Pulmonary Artery During Circulatory Disturbance. C. F. Kay, J. W. Woods Jr., H. F. Zinsser Jr. and J. M. Benjamin Jr.—p. 228.
Studies of Role of Liver in Human Carbohydrate Metabolism by Venous Catheter Technic: I. Normal Subjects Under Fasting Conditions and Following Injection of Glucose. P. K. Bondy, D. F. James and Betty W. Farrar.—p. 238.
*Metabolic Studies on Protein-Depleted Patients Receiving Large Part of Their Nitrogen Intake from Human Serum Albumin Administered Intravenously. Christine Waterhouse, S. H. Bassett and J. W. Holler. —p. 245.
Effects of Induced Malaria, Acute Starvation and Semi-Starvation on Electrophoretic Diagram of Serum Proteins of Normal Young Men. H. L. Taylor, O. Mickelsen and A. Keys.—p. 273.
Complement and Its Components in Human Cerebrospinal Fluid. M. Heidelberger and R. H. Muller.—p. 282.
Hematologic Observations in Patients with Chronic Hepatic Insufficiency: Sternal Bone Marrow Morphology and Bone Marrow Plasmacytosis. T. Jarrold and R. W. Vilter.—p. 286.
Cardiovascular Effects of Acutely Induced Hypothermia. O. Prec, R. Rosenman, K. Braun and others.—p. 293.
Relation of Influenza Virus and Bacteria in Etiology of Pneumonia. Elizabeth Starbuck Maxwell, T. G. Ward and T. E. Van Metre Jr. —p. 307.
Determination of Plasma After Gelatin Feeding as Diagnostic Procedure for Pancreatic Fibrosis. H. N. Christensen and H. Shwachman. —p. 319.
Studies in Cirrhosis of Liver: I. Relationship Between Plasma Volume, Plasma Protein Concentrations and Total Circulating Proteins. G. I. Hiller, E. R. Huffman and S. Levey.—p. 322.
Agglutination of Autoclaved Hemolytic Streptococci by Serum from Patients with Rheumatic Fever and Other Conditions. S. J. Liao. —p. 331.
Clotting Behavior of Human "Platelet-Free" Plasma: Evidence for Existence of "Plasma Thromboplastin." C. L. Conley, R. C. Hartman and W. I. Morse II.—p. 340.
Hemodynamic Effects of Hypotensive Drugs in Man: I. Veratrum Viride. E. D. Freis, J. R. Stanton, J. W. Culbertson and others.—p. 353.
Observations on Ballistocardiographic Pattern, with Special Reference to H and K Waves. J. L. Nickerson.—p. 369.
Effect of Adrenocorticotrophic Hormone in Congenital Adrenal Hyperplasia with Virilism and in Cushing's Syndrome Treated with Methyl Testosterone. R. A. Lewis and L. Wilkins.—p. 394.

Human Serum Albumin in Protein-Depleted Patients.—Waterhouse and associates say that when purified human serum albumin became available in large quantities through the Red Cross program, it was observed to have certain advantages over other materials in common use for the correction of protein depletion. Each of 4 subjects was given a daily dose of 60 Gm. of concentrated sodium-free albumin for ten or more days. Balances of nitrogen, calcium, phosphorus and potassium were made during control, albumin and postalbumin periods. Concomitant observations of serum protein fractions, plasma volume and renal function were made. Each of the 4 patients reacted differently; the variations were as follows: (1) development of intense proteinuria in a patient convalescent from rheumatic fever, without evidence of impaired renal function; (2) retention of water with peripheral edema, hydrothorax and pericardial effusion and poor utilization of the injected protein in a woman with probable generalized vascular disease; (3) excellent utilization, but eventual development of signs of cardiorespiratory embarrassment in a young woman in fair health except for moderate undernutrition, and (4) modification of the response in a normal young man by other dietary factors. The clinical response to human serum albumin given intravenously depends not only on its nutritive properties as a protein but also on two other factors, its potent osmotic activity and its nativity to the human body. Probably because of the last-named factor it is metabolized comparatively slowly in normal circumstances. When the substance is given in large quantities, its slow utilization results in the accumulation of significant amounts of osmotically active protein. To predict the response of the patient to injections of human albumin, one should take into consideration (*a*) his state of nutrition, especially with respect to protein, (*b*) the permeability of the capillaries in general and of the glomerulus in particular and (*c*) the status of the cardiac reserve. Proteinuria will develop eventually in any patient when saturation with albumin has occurred, and this is probably not due to renal damage but represents a physiologic response when the maximum reabsorptive capacity of the renal tubules for protein is exceeded.

Journal of Gerontology, Springfield, Ill.

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Biologic Approach to Aging Processes. J. C. Aub.—p. 1.
Senility and Intestinal Flora: Reexamination of Metchnikoff's Hypothesis. S. Orla-Jensen, E. Olsen and T. Geill.—p. 5.
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Urinary Excretion of Neutral 17-Ketosteroids in Middle-Aged and Old Men. E. Kirk.—p. 34.
Cardiovascular Survey of Residents in Custodial Institution for the Aged. M. Dolgin, M. Grossman, A. J. Simon and others.—p. 39.
Teaching Geriatrics: Basic Principles and Syllabus of Course Now in Fifth Year. F. D. Zeman.—p. 48.

Journal of Immunology, Baltimore

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Quantitative Studies in Anaphylaxis. III. Effect of Alum Adjuvant and Route of Administration on Sensitizing Dose. E. J. Coulson and H. Stevens.—p. 119.
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Measurement and Preservation of Antibodies in Human Sera. M. Heidelberger and Marie M. Dilapi.—p. 153.
Flagellar Antigens of Escherichia Coli. C. A. Stuart and P. L. Carpenter.—p. 161.
Blood Groups and Subgroups of Newborn. I. The A Factor of Newborn. E. Witebsky and Lillian M. Engasser.—p. 171.
Antibody Response of Rabbits to Single Injection of Type I Pneumococci. C. M. MacLeod, M. Heidelberger, Betty Robinson and others.—p. 179.
Antihyaluronidase Content of Human Blood Serum: Study in Age Differences. R. W. Quinn.—p. 185.
Influenzal Antibodies in Lymphocytes of Rabbits Following Local Injection of Virus. Susanna Harris and T. N. Harris.—p. 193.

Journal of Neurophysiology, Springfield, Ill.

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Pattern of Tactile Representation in Thalamus of Cat. V. Mountcastle and E. Henneman.—p. 85.
Effect of Preoccipital and Temporal Decortication on Learned Visual Discrimination in Monkeys. H. W. Ades and D. H. Raab.—p. 101.
Irritability of Mammalian Nerve Following Ischemia. E. L. Porter and P. S. Wharton.—p. 109.
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Effect of Localized Cutaneous Stimulation on Circulation in Duodenal Arterioles and Capillary Beds. C. A. Richins and K. Brizzee.—p. 131.
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Journal of Neurosurgery, Springfield, Ill.

6:97-186 (March) 1949

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Technic for Transplant of Musculospiral Nerve in Open Reduction of Fractures of Mid-Shaft of Humerus. M. T. Schnitker.—p. 113.
Follow-up Report of Spinal Cord Injuries in Group of World War II Patients. R. C. Schneider, J. E. Webster and J. E. Lofstrom.—p. 118.
Subdural Empyema. W. S. Keith.—p. 127.
Physiological Salt Solutions for Brain Surgery: Studies of Local pH and Pial Vessel Reactions to Buffered and Unbuffered Isotonic Solutions. K. A. C. Elliott and H. H. Jasper.—p. 140.
Paraphysial Cysts of Third Ventricle with Report of 8 Cases. J. Greenwood Jr.—p. 153.
Results of Operations for Lumbar Protruded Intervertebral Disk. J. Raaf and G. Berglund.—p. 160.

Journal of Urology, Baltimore

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*Treatment and Prognosis of Papillary Tumors of Renal Pelvis and Ureter. V. J. O'Conor.—p. 488.
Tumors of Ureter. F. C. Hamm and L. L. Lavalle.—p. 493.
Cystic Ureterovesical Protrusion: Report of 4 Cases in Children and 2 in Adults. H. O. Mertz, J. W. Hendricks and R. A. Garrett.—p. 506.
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Rhabdomyosarcoma of Urinary Bladder. H. J. Meisel, W. H. Heath and J. M. Miller.—p. 525.
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Vesico-Intestinal Fistulas: Report of 2 Cases of Fistula Between Bladder and Large Intestine Cured Without Preliminary Diversion of Fecal Stream. J. K. Ormond.—p. 554.
Female Urethra: Clinico-Pathologic Study. N. B. Powell and Elizabeth B. Powell.—p. 557.
Radical Surgery in Prostatic Carcinoma. F. P. Twinem and A. Davalos.—p. 575.
Carcinoma of Prostate: Statistical Study and Evaluation of Endocrine Therapy, with Preliminary Report on Additional Method of Treatment. H. Q. Gahagan and J. L. Fischman.—p. 587.
Anatomic Study of External Urethral Sphincter in Relation to Prostatic Surgery. H. C. Rolnick and F. K. Arnheim.—p. 591.
Radical Cure of Varicocele by New Technic: Preliminary Report. A. Palomo.—p. 604.
Anuria: Report of 27 Cases. J. K. Ormond and J. W. Best.—p. 608.
Manifestations of Lymphoblastomas in Genito-Urinary Tract. E. M. Watson, H. R. Sauer and M. G. Sadugo.—p. 626.
Application of Detergents to Urology. R. E. La Rue.—p. 646.
Clinical Study of New Sulfonamide (NU-445) in Treatment of Urinary Tract Infections. J. A. Lazarus and L. H. Schwarz.—p. 649.
Further Studies Relative to Treatment of Urinary Tuberculosis by Chemotherapy. G. E. Slotkin and W. Spencer.—p. 658.

Papillary Tumors of Renal Pelvis and Ureter.—O'Conor reports 482 nephrectomies and 16 renal explorations. An unusually high incidence of renal pelvic and ureteral tumors occurred in this series. Of patients who had nephrectomy for renal or ureteral tumor, 48 had cortical tumors while in 14 the tumor was primarily in the renal pelvis with secondary implants in ureter or bladder. Of these latter, 12 were papillary carcinomas and 2 were squamous cell tumors. There were 8 primary ureteral tumors, all papillary. Of the 12 papillary carcinomas primarily in the renal pelvis, 6 had implants in the ureter and in 4 small papillary tumors of the bladder were observed at the first examination. The treatment of choice for papillary tumors arising primarily in the renal pelvis or ureter is complete nephroureterectomy. Incomplete ureterectomy is often followed by recurrence, or subsequent tumor development in the ureteral stump, the intramural portion of ureter or the bladder mucosa. These secondary tumors are usually more extensive than the primary lesion and as a rule are less amenable to destruction. Papillary tumors of the upper part of the urinary tract are often associated with stone and chronic infection. Microscopic study of the ureters which have been removed from these patients suggests a widespread or diffuse metaplastic response to an apparent carcinogenic agent on the part of the ureteral epithelium. There is no justification in one's making a diagnosis of "benign" papillary tumor of the renal pelvis or ureter. To recommend local excision of ureteral tumors would seem a step backward in the treatment of the only neoplastic condition of the upper part of the urinary tract in which complete surgical treatment has improved the end results and period of postoperative survival.

Maine Medical Association Journal, Portland

40:59-75 (March) 1949

Anesthesia in Hypertensive Patient. G. Clapperton.—p. 59.
Urological Aspects of Hypertension. J. Memmelaar.—p. 61.
Cardiac Arrest with Recovery: Case Report. M. Ridlon, R. Feeley and C. S. Dwyer.—p. 62.
Surgical Aspects of Hypertension. G. L. Maltby.—p. 64.

40:75-98 (April) 1949

Colpectomy—in Management of Prolapse of Uterus and Vagina. L. A. Sweatt.—p. 75.
Fluorine and Its Effect on Teeth. H. I. Marcotte.—p. 77.
Tachycardia and Its Treatment. B. Beliveau.—p. 78.
Industrial Physician and Family Doctor. B. W. Russell.—p. 79.
Duodenal Ulcers: Some Surgical Aspects. A. F. DuMais.—p. 81.

Medicine, Baltimore

28:1-142 (Feb.) 1949

Pulmonary Insufficiency: II. Study of 39 Cases of Pulmonary Fibrosis. Eleanor deF. Baldwin, A. Cournand and D. W. Richards Jr.—p. 1.
*Pathology of Thymus in Myasthenia Gravis: Study of 35 Cases. B. Castleman and E. H. Norris.—p. 27.
Landry-Guillain-Barré Syndrome: Clinicopathologic Report of 50 Fatal Cases and Critique of Literature. W. Haymaker and J. W. Kernohan.—p. 59.

Thymus in Myasthenia Gravis.—Castleman and Norris discuss the pathologic findings in the thymus gland in 35 cases of myasthenia gravis. In 10 patients all or a portion of the thymus was replaced by a neoplasm; in the others, the thymus was grossly normal with respect to size and weight but on microscopic examination showed varying degrees of lymphoid germinal center infiltration of the medulla. Statistical data compiled from the 35 cases and from 297 cases collected from the literature demonstrated that the non-neoplastic thymus is more frequent in female subjects between the ages of 15 and 35 in contrast to the thymoma, which is more apt to develop in men between 40 and 60 years of age. Symptoms of myasthenia gravis are usually of shorter duration in the patient with thymoma. The thymic tumor of myasthenia gravis is usually an encapsulated, slowly growing, benign neoplasm, weighing about 70 Gm. In about 10 per cent of the cases it may encroach on neighboring structures and may produce local implants, but it has never been known to truly metastasize or to occur outside the thoracic cavity. The tumors are composed of both epithelial and lymphocytic cells in varying numbers, and this variation has led to the multiplicity of names. The authors prefer to use the term "thymoma." The non-neoplastic thymus in myasthenia gravis showed varying degrees of involution, and in 75 per cent of the cases the medulla was infiltrated with lymphoid germinal centers. Germinal centers are usually not found in the normal thymus; an occasional germinal center is found in a small percentage of the thymuses of exophthalmic goiter, Addison's disease and acromegaly. Their presence in large numbers almost certainly indicates myasthenia gravis. Although changes in the thymus are the most constant anatomic change in myasthenia gravis, thymectomy has not produced dramatic clinical improvement.

New England Journal of Medicine, Boston

240:445-490 (March 24) 1949

Viral Hepatitis: Consideration of Certain Aspects of Current Importance to Practicing Physician. J. R. Neefe.—p. 445.
Survey of Recent Therapeutic Measures in Cirrhosis of Liver. T. C. Chalmers and C. S. Davidson.—p. 449.
Variations in Hepatic Blood Flow in Man During Health and Disease. S. E. Bradley.—p. 456.
Post-Partum Hematoma. A. W. Lyons.—p. 461.
Tuberculosis. J. D. Wassersug.—p. 463.
Synovioma of Left Knee, with Metastases to Vertebras, Clavicle, Ribs, Pelvic Bones, Peritoneum, Abdominal Lymph Nodes, Lungs and Liver.—p. 472.
Adenocarcinoma of Cecum, with Previous Intussusception.—p. 476.

240:491-528 (March 31) 1949

Survival in Primary Carcinoma of Lung. R. H. Overholt and I. C. Schmidt.—p. 491.
*Pulmonary Embolism: Analysis of 74 Autopsy Cases Since 1941. K. Dehlinger and P. Riemenschneider.—p. 497.
*Serum Potassium Levels in Diabetic Coma. R. H. Sinden, J. L. Tullis and H. F. Root.—p. 502.
Delayed Pneumonia and Urticaria Following Bronchography. H. E. Bass.—p. 505.
Industrial Medicine. I. R. Tabershaw.—p. 508.
Endometriosis of Sigmoid.—p. 517.
Adenocarcinoma, Grade II, of Head of Pancreas, with Metastases to Peritoneum, Liver, Gallbladder, Regional Lymph Nodes, Ileum, Stomach and Lung.—p. 520.

Pulmonary Embolism.—According to Dehlinger and Riemenschneider there has been no significant decrease in the percentage of cases in which pulmonary emboli were demonstrated at necropsy at the New England Deaconess and New England Baptist hospitals since the introduction of definite and prophylactic treatment of venous thrombosis. This therapy includes venous interruption and the administration of heparin and dicumarol,® as well as prophylactic exercises, early ambulation and even paravertebral autonomic block in 1 case. During the thirteen years from 1928 through 1940 pulmonary emboli were found in 7.5 per cent of all autopsies, whereas the figure became 6.7 per cent during the following six year period. The percentage of operations that were followed by pulmonary embolism, as found at postmortem examination, has decreased somewhat more in the same intervals. Before January 1941 the figure was 0.13 per cent; since that date it has dropped to 0.09 per cent, but even this decrease is not definitely significant statistically. The authors decided to determine why many patients are still dying with pulmonary embolism despite the availability of anticoagulant drugs and the general use of venous interruption in recent years. No analysis of the numerous successfully treated cases was made. Hence, this report should be considered not a condemnation of the methods in use at the present time for the prevention of pulmonary embolism but rather an indication that the problem is still great, even though some of the recent papers lead one to believe that it has been all but completely solved. Seventy-four cases in which necropsy was performed between 1941 and 1946 were analyzed according to age, sex, immediate cause of death, primary site of thrombus, medical versus surgical status and preventive therapy. In only 5 of the 74 cases of pulmonary emboli did the patients receive specific therapy for the prevention of embolism. This suggests that the primary problem is the difficulty in the diagnosis of venous thrombosis and nonfatal pulmonary embolism.

Serum Potassium Levels in Diabetic Coma.—Sinden and associates call attention to the fact that the clinical importance of variations in the serum potassium level during treatment of diabetic coma has been emphasized in many reports. Low potassium values have been observed in certain patients undergoing treatment for diabetic coma, with fatal results unless suitable potassium solutions were administered promptly. Studies of serum potassium levels in shock, cardiac or renal failure indicate that if potassium is given as a therapeutic measure to patients with impending or actual renal failure, a dangerously high level of potassium in the blood serum may also have a fatal result. The physician responsible for the treatment of patients in diabetic coma must have in mind the possibility that critical alterations in the level of blood serum potassium may result in a fatal outcome unless proper treatment is given in an early stage. The causes of a decline in the serum level of potassium from a normal of around 5 milliequivalents per liter to levels of 3 milliequivalents or less are varied. During acidosis, particularly of the diabetic type, there is an immediate and increasing loss of potassium in the urine. This potassium comes chiefly from the cells, through disturbance in cellular permeability which occurs during diabetic coma. The authors present observations on 6 patients with diabetic coma in whom the potassium values were studied routinely. They conclude that in order to prevent dangerously low serum potassium levels in diabetic coma, it is essential that the administration of dextrose be omitted during the first few hours of treatment and that insulin be used in a more aggressive manner.

Northwest Medicine, Seattle

48:171-222 (March) 1949

The Medical Profession as Seen by an Oregon Legislator. R. T. Moore. —p. 174.
Radiation Treatment in Carcinoma of Cervix: Report of Results in 183 Cases. M. Harris.—p. 178.
Accuracy of Pantopaque Studies in Diagnosis of Herniated Intervertebral Disk. S. E. Rees and C. E. Donley.—p. 180.
Hamartoma of Urinary Bladder. T. A. Davis.—p. 182.
Diverticulum of Gastric Cardia. R. S. Smith and J. D. Mortensen. —p. 185.
Surgical Repair of Funnel Chest Deformity. J. K. Poppe.—p. 189.

48:223-292 (April) 1949

Significance and Demonstration of Lobar and Segmental Pulmonary Collapse. J. H. Walker.—p. 241.
Glaucoma and Orally Administered Belladonna. E. V. Ullman and F. D. Mossman.—p. 245.
Ambulatory Electroshock Therapy. H. M. Landberg.—p. 247.
Health Department, Good Servant but Bad Master: Role of Physician in Preserving Individual Freedom. F. B. Exner.—p. 249.
Stevens-Johnson Syndrome with Severe Pulmonary Involvement. R. L. Olsen, C. Barron and J. N. Sledge.—p. 251.
Urethane in Treatment of Chronic Myelogenous Leukemia. R. I. Crone and D. M. Ulrich.—p. 252.
Kielland Forceps: Incidence of Its Use in Review of 1,646 Deliveries. J. C. Brougher.—p. 254.
Endemic Goiter and Cretinism. W. H. Orr.—p. 257.

Oklahoma State Medical Assn. Jour., Oklahoma City

42:87-124 (March) 1949

Ten Years' Progress in Ophthalmology. C. G. Stuard.—p. 90.
Food Infections and Intoxications. F. H. Top.—p. 93.
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42:125-180 (April) 1949

Subtrochanteric Fractures of Femur. C. R. Rountree.—p. 128.
Principles Underlying Management of Renal Calculi. V. Vermooten. —p. 131.
Benign Tumors of Breast. S. N. Stone.—p. 135.
Disease of Scrotal Contents. D. W. Branham.—p. 138.
Cerebral Palsy. O. R. Gregg.—p. 140.

Philippine Medical Association Journal, Manila

25:51-108 (Feb.) 1949

Compensable Illnesses and Injuries: Their Incidence and Prevention. J. S. Santillan and T. V. Ganzales.—p. 51.
Congenital Hydronephrosis. D. Antonio Jr.—p. 61.
Occupational Carbon Monoxide Poisoning: Report of 7 Cases with 2 Fatalities. G. D. Dizon, J. Y. Navarro, V. J. Luciano and others. —p. 67.
Biochemical Studies on Tuberculosis. VI. Diagnostic Significance of Nucleic Acid Test in Tuberculosis. J. F. Leyva.—p. 75.
Early Ambulation. F. V. D'Bayan.—p. 83.

Plastic and Reconstructive Surgery, Baltimore

4:123-224 (March) 1949

Surgical Repair of Decubitus Ulcer in Paraplegics; Further Observations. R. Blocksma, J. G. Kostrubala and P. W. Greeley.—p. 123.
Vascularization of Tubed Pedicles. H. Conway, R. B. Stark and J. P. Docktor.—p. 133.
Method for Repair of Unilateral Cleft Lip. W. H. Steffensen.—p. 144.
Mandibular Reconstruction, World War II. T. G. Blocker Jr. and R. A. Stout.—p. 153.
Cancellous Iliac Bone in Depressions of Forehead, Nose and Chin. D. W. Macomber.—p. 157.
Fundamentals in Surgical Treatment of Mandibular Prognathism. C. W. Waldron, C. I. Karleen and C. A. Waldron.—p. 163.
Metallic Implants and Integrated Artificial Eyes. W. L. Hughes.—p. 175.
Repair of Defects Produced by Excision of Tumors in the Eye Region. K. M. Marcks.—p. 178.
Repair of Full-Thickness Cheek Defects Following Irradiation Necrosis. R. H. Ivy.—p. 188.
Associated Congenital Defects of Ears, Eyelids and Malar Bones (Treacher Collins Syndrome). C. L. Straith and J. R. Lewis.—p. 204.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

70:375-564 (March) 1949. Partial Index

Streptomycin in Treatment of Leptospira Carriers. Experiments with Hamsters and Dogs. K. T. Brunner and K. F. Meyer.—p. 450.
Benzene-Inactivated Rabies Vaccine. K. Habel, J. F. Bell and J. T. Wright.—p. 455.
*Rabies Vaccine Freed of Factor Causing Allergic Encephalitis. J. F. Bell, J. T. Wright and K. Habel.—p. 457.
*Aureomycin in Urinary Infections Due to Gram-Negative Organisms. A. M. Rutenburg and F. B. Schweinburg.—p. 464.
Specificity of Differential Sheep Cell Agglutination Test in Rheumatoid Arthritis. S. E. Sulkin, R. M. Pike and H. C. Coggeshall.—p. 475.
Simplified Indirect Complement-Fixation Test Applied to Newcastle Disease Immune Avian Serum. D. M. Wolfe, Lottie Kornfeld and F. S. Markham.—p. 490.
Evaluation of Certain Dangers in Use of Jet Injection Technic. R. V. Brown.—p. 507.
Assay of Secretin and Cholecystokinin Concentrates. L. L. Gershbein, C. C. Wang and A. C. Ivy.—p. 516.
Effect of Zinc on Serum Alkaline Phosphatase Activity in Patients With and Without Cancer. O. Bodansky and Olga Blumenfeld.—p. 546.
*Multiplication of Influenza Virus in Dead Chick Embryos. O. Lahelle and F. L. Horsfall Jr.—p. 547.

Rabies Vaccine Freed of Factor Causing Allergic Encephalitis.—Bell and associates present a method for the removal from rabies vaccine of the factor which causes allergic encephalomyelitis. This factor is not removed by extraction with benzene and ether, but preliminary treatment of the vaccine with these solvents facilitates separation by subsequent treatment. The presence of calcium acetate prevents the loss of antigen when the vaccine is washed. It does not prevent removal of the encephalitic factor which appears to be water soluble. About one half of the total nitrogen of the vaccine is removed by this washing process. The technic is as follows: 1. A suspension of infected brain in water is dried from the frozen state. 2. The dried brain is extracted with benzene followed by ether (live virus may be killed in this stage by heating in benzene). 3. After removal of the ether the dried brain is suspended in distilled water. 4. Sufficient solution of calcium acetate is added to make final concentration of tenth-molar calcium acetate, and the suspension is permitted to stand in the cold for an hour or two. 5. The calcium acetate solution is removed by centrifugation or infiltration, and the sediment is resuspended in distilled water to the original volume with agitation (clumps of sediment must be broken up). 6. The distilled water is removed by centrifugation or filtration. 7. The sediment is resuspended in distilled water or saline solution and homogenized.

Aureomycin in Urinary Infections.—According to Rutenburg and Schweinburg aureomycin is highly effective against many strains of gram-negative bacilli in vitro, including many which were found to be resistant to sulfonamide drugs, penicillin and streptomycin. The sensitivity of various strains of a given species varies greatly. Clinical trial in 10 patients with urinary infections which were refractory to previous treatment with other antibiotics resulted in a clinical cure of all 10 patients. Bacteriologically, 8 patients were cured and 2 were greatly improved.

Multiplication of Influenza Virus in Dead Chick Embryos.—Lahelle and Horsfall performed experiments in which time and temperature at which embryos were held were varied over wide ranges. The result obtained indicate that the PR8 strain of influenza A virus is capable of multiplication in the tissues of dead chick embryos if incubation at 35 C. is sufficiently prolonged. The virus multiplies in dead embryos to an extent comparable to its multiplication in the living embryo. These results may be of practical usefulness, especially in field work. When adequate laboratory facilities are lacking, dead embryos which have been stored for considerable periods may prove satisfactory for the recovery of the infectious agent.

Psychiatry, Washington, D. C.

12:1-104 (Feb.) 1949. Partial Index

Theory of Anxiety and Nature of Psychotherapy. H. S. Sullivan.—p. 3.
Management of Type of Institutional Participation in Mental Illness. A. H. Stanton and M. S. Schwartz.—p. 13.
Anxiety and Guilt in the Modern Community. W. Line.—p. 27.
Dynamics in Hypnotic Induction. J. A. Christenson Jr.—p. 37.
Study of Mothers of Schizophrenic Patients. T. Tietze.—p. 55.

Psychosomatic Medicine, New York

11:1-68 (Jan.-Feb.) 1949

Emotional Factors in Etiology of Hyperthyroidism: Report of Preliminary Survey.—p. 2.
Physiologic Studies of Reaction to Stress in Anxiety and Early Schizophrenia. R. B. Malmo and C. Shagass.—p. 9.
Physiologic Study of Symptom Mechanisms in Psychiatric Patients Under Stress. R. B. Malmo and C. Shagass.—p. 25.
Effect of Chronic Fear on Gastric Secretion of HCl in Dogs. G. F. Mahl.—p. 30.

South Dakota Journal of Medicine, Sioux Falls

2:75-114 (March) 1949

The Bacteriologist Considers Drug-Fastness. R. P. Elrod.—p. 75.
Cancer of Breast. W. C. White.—p. 79.
*Idiopathic Ulcerative Colitis. C. Dennis.—p. 83.

2:115-152 (April) 1949

Benign Tumors of Breast and Associated Conditions. M. M. Copeland.—p. 116.
Exfoliative Cytology. R. L. Ferguson.—p. 124.
Pathologic Diagnosis of Cancer. E. DeCoursey.—p. 126.

Idiopathic Ulcerative Colitis.—Dennis states that many patients may be satisfactorily treated with nonsurgical regimens alone. In the experience at the University of Minnesota, where the cases are more highly selected, more than three fourths are treated surgically. At present, patients with fulminating disease and those of relatively early disease are treated by vagotomy when medical measures have not produced subsidence of the disease within four weeks. Patients who have had the disease longer than three weeks and patients who do not respond well to vagotomy should have ileostomy and colectomy. If the rectum is not removed, it must be examined every four months because of the risk of cancer formation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

22:183-242 (April) 1949

Symposium on Small Field X-Ray Therapy for Deep-Seated Tumors, with Special Reference to Rotation Technics. P. R. Steed and others.—p. 185.
Use of X-Ray Films in Beam Direction for X-Ray Therapy. W. A. Copcutt.—p. 210.
Note on Klein-Nishina Formulas for Compton Scattering of Photons by Electrons, with Table. R. K. Appleyard and D. J. Allen-Williams.—p. 215.
*Use of CO_2 and Air as Antispasmodics. P. Cave.—p. 216.
Bronchography—Methods by Which It May Be Performed and Factors Influencing Choice of Method Employed: Part II. A. A. Vickers.—p. 224.
Home-Made Viewing Box Employing Fluorescent Illumination. J. Aspin.—p. 234.

Use of Carbon Dioxide or Air as Antispasmodics.—Cave points out that in gastrointestinal radiography spasm is common either alone or combined with organic disease, and its elimination as a cause of narrowing is an important step in diagnosis. Not infrequently the radiologist may have serious doubts as to whether narrowing is of spastic or organic origin. A simple, efficient and rapid method of relieving spasm in the alimentary tract is of considerable practical importance. Inflation of parts of the alimentary tract by air or carbon dioxide generated by effervescent substance may be of value in differentiating between alterations of the lumen due to spasm and those due to organic change. The increase of pressure readily abolishes spasm, but infiltrations of the wall remain undistended. Inflation of the esophagus or stomach is easily achieved with the use of compound effervescent powders (Seidlitz powders). The method has proved useful in overcoming pylorospasm. The employment of air contrast in the colon is well established, but its value as an antispasmodic is less appreciated.

British Medical Journal, London

1:603-644 (April 9) 1949

Medical Fitness for Air Travel. H. Whittingham, A. B. Barbour and J. C. Macgown.—p. 603.
Physiological Basis of Vagotomy. A. D. Beattie.—p. 607.
Notes on Experiments Illustrating Normal Temperature Regulation in Young Men. S. Wright.—p. 610.
Use of Diparcol in Parkinsonism. R. S. Duff.—p. 613.
Successful Treatment of Typhoid Carrier with Penicillin and Sulphamerazine. C. A. Rumball and L. G. Moore.—p. 615.
"Myanesin" in Treatment of Tetanus. M. H. A. Davison, A. B. Ward and E. A. Pask.—p. 616.
"Minor" Injury of Terminal Phalanx. F. I. Powell.—p. 618.

East African Medical Journal, Nairobi

26:31-56 (Feb.) 1949

Leprosy in Kenya. J. R. Innes.—p. 32.
*Cutaneous Cancer in Kenya. F. Piers.—p. 36.

Cutaneous Cancer in White Population in Kenya.—Piers says that of the 51 patients with cutaneous cancer seen by him since 1941, 27 gave a history of long occupational exposure to sun and 10 others, whose occupation did not suggest such exposure, gave a past history of such exposure. Only 14 patients gave no history of exposure to sun light. Chronic sunburn was present in 34 patients, permanent suntan in 3, farmer's skin in 18 and chronic solar dermatitis in 13. Among the European residents of Kenya cutaneous cancer is second in frequency only to breast cancer. The habit of dispensing with the sun helmet altogether and of participating in outdoor activities and sports without adequate protection is widespread among the younger generation in Kenya. The danger inherent in this careless exposure is not realized by the public. There is little hope that reasonable arguments will prevail against the fashionable craze of modern sun worship. The amount of sun light required for the production of vitamin D is small; it can be obtained by limited exposure even in temperate climates. In the tropics the effects of prolonged insolation are eventually injurious rather than beneficial. The risk of cutaneous cancer can be easily decreased by the regular application of protective creams and by the wearing of hats and suitable light clothing.

Journal of Laryngology and Otology, London

68:107-178 (March) 1949

The End of an Era: Retrospect and Prospect. W. Howarth.—p. 107.
*Septicemia After Tonsil Operations. E. W. Williams.—p. 115.
Evolution of Auditory Conducting Apparatus: I. New Theory Based on Functional Considerations. A. Tumarkin.—p. 119.
Observations on Antro-Choanal Polypus. A. R. Dingley.—p. 141.
Clinical Aspect of Perceptive Deafness—So-Called Nerve or Internal Ear Deafness. E. D. D. Davis.—p. 144.

Septicemia After Operations on Tonsils.—According to Williams acute septicemia after tonsil operations is rare. Among 10,000 tonsillectomies performed by him, there were only 2 cases of septicemia. At least twice that number had been performed by others at his hospital during the same period with 2 instances of septicemia. Of the 4 cases reported, 2 had a fatal outcome. The most striking features of the condition are vomiting, diarrhea and collapse. It is interesting that this rare complication has been recorded three or four times in pairs, each pair composed of 2 small children from the same family. If the explanation is that in each pair acute streptococcic tonsillitis was imminent, it is difficult to see how these accidents can be avoided and why there have not been more numerous isolated examples of this complication.

Lancet, London

1:593-636 (April 9) 1949

Treatment of Congestive Heart-Failure. H. A. Reid and W. Hughes. —p. 593.
*Subcutaneous Implantation of Insulin in Diabetes Mellitus. L. Vargas. —p. 598.
Complete Rupture of Membranous Urethra. A. H. Hunt and C. N. Morgan.—p. 601.
Filamentous Forms Associated with Newly Isolated Influenza Virus. C. M. Chu, I. M. Dawson and W. J. Elford.—p. 602.
Role of Di-Isopropyl Fluorophosphonate in Surgery. J. P. Quilliam and T. A. Quilliam.—p. 603.
Operation for Severe Varicose Veins During Pregnancy. H. Dodd. —p. 606.
Mortality from Pink Disease in 1923-47. W. P. D. Logan.—p. 608.

Implantation of Insulin in Diabetes Mellitus.—Vargas cites earlier investigations by himself and associates which proved that pellets of protamine zinc insulin complex mixed with cholesterol gave up their insulin slowly when they were implanted in normal rabbits. He reports results obtained in the first 7 patients treated by this new method. It was proved in these 7 patients that pellets of protamine-zinc-insulin-cholesterol implanted subcutaneously are absorbed as slowly as fat-soluble hormones. The dose used in the implant varied from 20 to 92.7 units of insulin per kilogram of body weight, except in 1 case in which 450 units was given. It was calculated, in accordance with experimental data, that the daily absorption of the implant was about 1 per cent, which seems to be confirmed by the present cases. This assures a maximum duration of activity of the implant of about one hundred days. The author considers the method of implanting pellets of insulin extremely promising and worth further study in a larger number of patients.

Medical Journal of Australia, Sydney

1:225-246 (Feb. 19) 1949

Intestinal Obstruction in Infants: Challenge. A. M. Clarke.—p. 225.
Hand Injuries. B. K. Rank.—p. 228.
Head Injuries in Civil Practice. L. Lindon.—p. 231.
Value of Albumin-Fortified Anti-Rh Serum for Rh Testing. V. I. Krieger.—p. 233.

1:289-332 (March 5) 1949. Partial Index

Nervous and Chemical Control of Uterus. F. A. Maguire.—p. 289.
Brief Summary of Indications for Methods of Induction of Labor. T. D. Hughes.—p. 291.
Complications and Results of Induction of Labor. T. H. Small.—p. 292.
Vaginal Hysterectomy-Colporrhaphy. A. L. Watson.—p. 297.
Treatment of Ankylosing Spondylitis and Osteoarthritis. F. Duval. —p. 301.
Osteoarthritis of Hip: Surgical Treatment. J. Hoets.—p. 303.
BCG Vaccine. E. A. North.—p. 306.
Epidemiology of Primary Herpes Simplex Infection. S. G. Anderson and J. Hamilton.—p. 308.
Ocular Prosthesis, with Special Reference to Conjunctival Sac. D. B. Waugh.—p. 311.
Some Clinical Aspects of Water Balance. J. G. Hislop.—p. 313.

South African Medical Journal, Cape Town

23:221-240 (March 26) 1949. Partial Index

Thyrotrophic Exophthalmos. C. J. B. Muller.—p. 221.
*Acute Toluene Poisoning. J. B. Lurie.—p. 233.

Acute Toluene Poisoning.—Lurie reports the case of a man who had to clean the inside of a tank, the sides and floor of which were coated with an emulsion of DDT containing 45 per cent pure toluene. The floor of the tank contained about six inches of water placed there for cleaning purposes. The man, wearing a respirator, was lowered into the tank and immediately removed the respirator. He then commenced sluicing the sides of the tank. Two other men wearing respirators, while awaiting their turn to be lowered into another tank, were watching. They noticed the man in the tank collapse after he had been working for approximately fifteen minutes. They pushed the man into the fresh air, where he recovered consciousness after artificial respiration had been given for a few minutes. He was taken to a hospital. His overalls, which were sodden with DDT emulsion, were removed. He stagged around and appeared to be extremely irritable, restless, disoriented and excited. About three hours after the incident, he appeared semicomatose, rather restless, only slightly disoriented and quiet rather than excited. He was not able to answer questions rationally. He was dyspneic, and examination of the chest revealed generalized rales and rhonchi, with evidence of excessive mucus in the bronchi. The treatment included measures to counteract shock and penicillin sodium therapy. A week later the lungs were clear. The condition in this case was diagnosed as acute toluene poisoning; nevertheless, poisoning with DDT, though remote, had to be excluded. No case of DDT poisoning has so far been described where symptoms and signs manifested themselves fifteen minutes after exposure. The toxicity of toluene in its acute form is chiefly related to the central nervous system. The affinity of benzene and toluene for the lipase substances present in the cells of the central nervous system will produce symptoms characteristic of inebriation, narcosis and endogenous psychosis. Headache, vertigo, nausea, fatigue and giddiness will be the predominant complaints and disturbance of equilibrium (with a positive Romberg's sign), ataxia, paresthesia and staggering gait the chief signs. Psychotic disturbances will manifest themselves in restlessness, disorientation, loss of memory, fugues, hallucinations and irritability, culminating in loss of consciousness. The wearing of respirators should be rigidly enforced in those working for even a short period in heavy concentrations of benzene and toluene.

Transactions Royal Soc. Trop. Med. and Hyg., London

42:417-510 (March) 1949. Partial Index

Some Observations on Action of Quinine, Atebrin, and Plasmoquine on Plasmodium Vivax. M. J. Mackerras and Q. N. Ercole.—p. 443.
Observations on Action of Quinine, Atebrin and Plasmoquine on Gametocytes of Plasmodium Falciparum. M. J. Mackerras and Q. N. Ercole. —p. 455.
Studies on West African Strain of Plasmodium Falciparum: II. Efficacy of Paludrine (Proguanil) as Therapeutic Agent. G. Covell, W. D. Nicol, P. G. Shute and M. Maryon.—p. 465.
Chronic Pulmonary Schistosomiasis: Clinical and Radiologic Study. M. Erfan, H. Erfan, A. M. Mousa and A. A. Deeb.—p. 477.
*Treatment of Polycythemia Vera: Record of 1 Case Treated with Ancylostoma Infection. H. F. Nagaty and A. F. Zanaty.—p. 493.

Treatment of Polycythemia Vera by Artificial Infection with Ancylostoma Duodenale.—Nagaty and Zanaty present the case of a man, aged 55, who had polycythemia vera. They attempted to produce in him helminthic anemia by inducing infection with Ancylostoma duodenale. This treatment was tried for the first time by Duvoir in 1940. The authors' case is the second in which treatment by Ancylostoma infection is described. They describe how the Ancylostoma larvae were obtained, how they were applied and the results of the blood tests made from time to time after the introduction of infective Ancylostoma larvae. On the date of the last examination, about eighteen months after Ancylostoma larvae had first been introduced, the red cell count was normal and the hemoglobin level had fallen to 60 per cent; the total leukocyte count was still high, with pronounced eosinophilia. The patient felt and looked better. There was no giddiness, headache or palpitation on exertion; his pulse rate was 75 per minute, and he could walk

are preceded for a week or two by signs of increased sympathetic dystonia. In evaluating whether the medicinal treatment which under these conditions was begun in group 3 was effective in preventing a relapse, the author says that during a four month period the relapse rate was 17 in group 1 and 10 in group 3. The purpose of the study was to determine whether the tendency to relapse could be reduced by influencing the sympathetic nervous system by drugs that act on the brain stem. The observations indicate that the sympathetic nervous system plays an important role in ulcer recurrence.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

93:541-616 (Feb. 19) 1949. Partial Index

*Mechanical Heart-Lung System. J. Jongbloed.—p. 548.
Investigation of Causes of Death in 200 Stillborn Infants. B. S. ten Berge and G. Linthorst.—p. 553.

Mechanical Heart-Lung System.—On the basis of experiments in dogs with a mechanical device which takes over the function of the heart and lungs, Jongbloed constructed a heart-lung system with a capacity suitable for human subjects. He describes this apparatus, the most important part of which is a new type of artificial lung, the spiral oxygenator. In experiments on large dogs (over 30 Kg.), in which only half of the apparatus was in use, this new mechanical heart-lung system came up to all expectations.

93:617-692 (Feb. 26) 1949. Partial Index

*Development of Gallstones After Gastric Resection for Ulcer. C. L. H. Majoor, T. J. J. Suren and M. M. Madlener.—p. 626.
Insufficiency of Sphincter of Oddi. H. van Ijzeren.—p. 631.

Gallstones After Gastric Resection.—Majoor and associates present the case of a woman, aged 47, who underwent gastric resection for duodenal ulcer. About two months after the operation she complained of colicky pains in the upper part of the abdomen. Roentgenologic examination of the gallbladder showed small, "swimming" stones, which had not been present before the operation on the stomach. This supports the view that the Billroth II resection may promote the formation of gallstones. Numerous small stones were found in the gallbladder as well as white, sugar-like crystals of cholesterol. These crystals represent probably the first phase in the morphogenesis of gallstones.

93:769-844 (March 12) 1949. Partial Index

Sympathetic Reactions Caused by Stimulation of Labyrinth. J. Hulk and H. E. Henkes.—p. 783.
*Denervation of Joints in Arthritis Deformans. E. A. Immink.—p. 791.
Case of Amebic Hepatitis. J. M. Cannoo.—p. 799.

Denervation of Joints in Arthritis Deformans.—Immink shows that degenerative, toxic-infectious and constitutional factors are involved in arthritis deformans. It was Tavernier who suggested that pain caused by this process be counteracted by denervation of the involved joint. In some instances the author combined Tavernier's denervation with Chapchal's paravertebral sympathetic block. His results in the denervation of twenty hip joints were good (disappearance of pain and great improvement in mobility) in 13 cases, fair (disappearance of pain and some improvement in movement) in 5 and in the other 2 there was no improvement. The denervation of nineteen knee joints gave good results in 11 cases, fair results in 6 and effected no improvement in 2 cases.

Presse Médicale, Paris

57:353-364 (April 20) 1949. Partial Index

*Treatment of Tuberculosis in Early Infancy with Streptomycin. J. Cathala, P. Auzépy, R. Bastin and J. Hartmann.—p 353.
Retarded Penicillin. New Preparations Used for Treatment of Gonorrhea. C. Levaditi, H. Penau, A. Vaisman and G. Hagemann.—p. 355.
New Retarded-Penicillin Preparations for Treatment of Experimental and Human Syphilis. C. Levaditi, H. Penau, A. Vaisman and G. Hagemann.—p. 356.
Contribution to the Study of Topectomy. M. Feld and R. Messimy.—p. 358.

Streptomycin in Tuberculosis of Infants.—Cathala and co-workers report on two years' experience with streptomycin in the treatment of tuberculosis in early infancy. Eighteen infants between 6 months and 3 years of age with tuberculous meningitis were given daily intraspinal injections of 2.5 cg. of the drug for ten to twelve days; later these injections were given twice or once per week. In addition, the infants were given daily 5 cg. of the drug per kilogram of body weight in two injections at twelve hour intervals. Twelve infants died. Three patients were alive and normal, seventeen months, seven months and one month, respectively, after treatment was discontinued; 2 patients were in good condition, but treatment had not been discontinued at the time of reporting. Fifty-two infants, between 2½ months and 3 years of age, 11 with caseous types of pulmonary tuberculosis, 7 with miliary tuberculosis, 14 with primary complex and involvement of juxtatracheal lymph nodes, 16 with primary complex and a favorable prognosis, 3 with tuberculosis of the bones and 1 with tuberculous mastoiditis were given daily doses of 3 to 5 cg. of the drug per kilogram of body weight for six to twelve weeks. Twelve patients died and 40 recovered. Among those that recovered were 3 with miliary tuberculosis and 4 with bronchopulmonary tuberculosis in whom multiple nodules were demonstrated on roentgenologic examination. Treatment with streptomycin proved successful in patients regarded as incurable. Results varied, and treatment was prolonged, painful and expensive. Although complete sterilization of the organism does not seem likely to be achieved, treatment with the drug is advisable for all types of tuberculosis in early infancy, because a primary infection with a grave prognosis may be converted into a benign primary infection permitting the patient to acquire permanent immunity.

Revista Argentina de Reumatología, Buenos Aires

13:262-284 (March) 1949. Partial Index

*Treatment of Rheumatoid Arthritis. M. Losada L. and O. France S.—p. 274.

Treatment of Rheumatoid Arthritis.—Losada and France employed a gold preparation in 136 adult patients with rheumatoid arthritis. Results are recorded in 60 patients given intramuscular injections of sodium gold thiosulfate in doses of 0.01 Gm. with intervals of six days for a first course of five injections followed by injections of 0.05 Gm. of the drug with intervals of fifteen, twenty or thirty days. The disease had existed less than one year in 13 patients and between two and ten years in the remaining patients. Cure was obtained in 19 patients and improvement in 17. In the remaining patients either the treatment had failed or the results were unknown to the authors. Toxic, acute reactions occurred in 20 patients, in 9 of whom the treatment had to be discontinued. Sodium gold thiosulfate therapy is of value in rheumatoid arthritis provided it is administered early in the course of the disease and for a period varying between one or two years. Hepatic, intestinal, renal, blood and skin disease, cardiac insufficiency, asthma, grave diabetes and pregnancy are contraindications. Gold therapy gives mediocre results in patients with spondyloarthritis and with Still-Chauffard and Felty's syndrome.

Semaine des Hôpitaux de Paris

25:755-796 (March 6) 1949. Partial Index

Chair of Rheumatology; Inaugural Lecture. F. Coste.—p. 755.
Plasmocyte Leukosis; Comparison with Kahler's Disease and Leukoblast Leukosis. P. Milliez and J. Mallarmé.—p. 763.
*Aspiration Liver Biopsy by Transthoracic Route. L. Bertrand.—p. 769.
*Subcutaneous and Cutaneous Vaccination with BCG, 1926 to 1948. J. Heimbeck.—p. 771.

Aspiration Liver Biopsy.—Bertrand performed 34 aspiration liver biopsies in eight months on patients with miliary pulmonary tuberculosis who had been treated with streptomycin. On admission some of these patients presented moderate hypertrophy of the liver. More often the liver was normal in size or rapidly became normal with streptomycin therapy. The site of insertion of the needle was either the seventh or the eighth intercostal space in the anterior axillary line. Liver puncture was done with local anesthesia with 10 cc. of a 1 per cent solution of procaine hydrochloride. The cannula used was 16 cm. in length, 1.5 to 2 mm. in width and fitted with a trocar. The bleeding, clotting and prothrombin times were determined before the puncture. Scapular radiating pain may be experienced in the course of puncture and may persist for several hours, but it seldom requires opiates. The exploration is usually painless.

better and for longer periods. His color was normal, and there was no congestion of the skin or engorgement of the face. He was more energetic and did his regular job efficiently. The authors list the advantages of treating polycythemia by artificial infection with Ancylostoma duodenale.

Acta Tuberculosea Scandinavica, Copenhagen

23:1-122 (No. 1) 1949

- *Diagnostic BCG Test. H. J. Ustvedt and A. Aanonsen.—p. 1.
- Further Investigations on Pathogenesis of Renal Tuberculosis: Relation Between Pulmonary and Urogenital Tuberculosis. H. J. Ustvedt and H. Wergeland.—p. 36.
- Pathogenesis of Pulmonary Tuberculosis. R. H. Dahl.—p. 63.
- Studies on Inflammation: Investigations into Bacterial Fixation at Site of Inflammation. U. Voigt.—p. 79.

Diagnostic BCG Test.—Ustvedt and Aanonsen show that tuberculin tests may fail in the presence of tuberculosis and occasionally elicit positive results (nonspecific reactions) in the absence of the disease. They feel that increasing the dose of tuberculin in the Mantoux test beyond 1 mg. will lead to the production of too many nonspecific reactions. Other methods must be found for separating the infected from the noninfected within the tuberculin-negative group and for distinguishing between specific and nonspecific reactions. They suggest that in tuberculin-negative persons and those with a negative Pirquet reaction and a positive Mantoux "early reaction" to cutaneous application of BCG may be employed in order to single out among tuberculin-negative persons those who, in spite of tuberculin negativity, harbor a tuberculous infection and to distinguish between specific and nonspecific Mantoux reactions in the Pirquet-negative but Mantoux-positive patients. The test is carried out by means of two punctures in the skin through a drop of BCG containing 20 mg. per cubic centimeter; the results ought to be read after six days. Distinct formation of papules indicates specific reaction, which is designated positive early reaction to BCG. The test ought further to be employed in persons vaccinated with BCG who show tuberculin negativity after vaccination, and by means of follow-up investigations it should be ascertained whether positive early reaction to BCG constitutes a sufficient criterion of immunity.

Archivio Italiano di Chirurgia, Bologna

71:71-146 (No. 2) 1949. Partial Index

- *Experiments on Blood Transfusion: Elimination of Bile Pigments After Transfusion of Preserved Blood and of Plasma. V. Laudicella.—p. 85.

Transfusion of Blood or Plasma.—Laudicella bled dogs, removing the amount of blood which corresponded to the amount of blood or plasma to be transfused. Bilirubin elimination was measured with the aid of an internal biliary fistula. Transfusion of large quantities of blood, either fresh or conserved, increases the elimination of bilirubin in proportion to the amount of bilirubin yielded by destruction of all transfused erythrocytes. Post-transfusion hemolysis is of longer duration after transfusion of preserved blood than after transfusion of fresh blood. Transfusion of small quantities of fresh blood elicits only mild hemolysis, which shows that part of the transfused erythrocytes are used by the blood. Plasma infusion does not cause hemolysis. The author suggests plasma infusions combined with repeated transfusions of small quantities of fresh blood instead of large blood transfusions.

Medizinische Klinik, Munich

44:225-256 (Feb. 25) 1949. Partial Index

- *Results Obtained with *Thiosemicarbazone Therapy of Tuberculosis.* H. Malluche.—p. 225.
- Case of Periarteritis Nodosa; Demonstration of Vasoconstrictor Effect of Patient's Serum. W. D. Germer.—p. 231.
- Morphologic Investigation on Shock, Collapse and Fat Embolism. W. Gloggengiesser.—p. 235.
- Question of Conservative Treatment of Senile Cataract. W. Straub. —p. 239.

Thiosemicarbazone in Tuberculosis.—Malluche treated 50 patients with exudative pulmonary tuberculosis with thiosemicarbazone. One tablet, containing 0.125 Gm. of thiosemicarbazone and 0.125 Gm. of sulfathiazole, was given daily by mouth. Treatment was continued for several months. In 7 patients with severe pulmonary tuberculosis, combined with tuberculosis of the colon in 6 and with tuberculous empyema of the knee joint in 1, considerable clinical roentgenologic improvement was obtained and the prognosis was definitely improved. Fifteen patients showed only temporary clinical and roentgenologic improvement without change in the prognosis; in 14 patients (28 per cent) with severe pulmonary tuberculosis, 1 of them with suppurating tuberculosis of the thoracic vertebrae and transverse paralysis, there was little and only temporary improvement without change in prognosis, and 3 patients died; in 4 patients there was only a delay in the fatal course of their disease; treatment failed in 7 patients, and 3 patients had not been treated long enough for correct evaluation. In 20 patients the temperature was restored to normal and the amount of sputum was reduced. In patients in whom other organs in addition to the lungs were involved, the extrapulmonary tuberculosis showed better and more rapid improvement than the pulmonary tuberculosis. Results were best in intestinal tuberculosis, the patients gaining considerably in weight. Resolution of infiltration was the primary effect of the treatment in pulmonary tuberculosis. Untoward reactions consisted of headache, anorexia, nausea, vomiting, epistaxis and choked disk, but only occasionally were these severe enough to require that treatment be discontinued. Thiosemicarbazone is a chemotherapeutic agent with a specific effect on Koch's bacillus; in intestinal tuberculosis the effect is superior to that of any other drug.

44:485-512 (April 22) 1949. Partial Index

- *Roentgen Rays in Treatment of Oliguria and Anuria. R. Heintz.—p. 496.
- Diagnosis of Parathyroid Insufficiency. E. L. Schäfer.—p. 500.
- *Peptic Ulcer and Sympathetic Nervous System. K. Nitsch.—p. 503.
- Late Edema in Presence of Normal Albumin Content. H. Gros.—p. 511.
- Short Alkaline Tolerance Test as Method for Detection of Acidosis. H. Böttner and H. Linden.—p. 514.
- Clinical Report on Testosterone Therapy of Carcinoma of Breast. W. Jorde.—p. 516.

Roentgen Therapy in Anuria.—The first of the 3 patients presented by Heintz was a woman, aged 51, who had been treated with sulfonamide drugs in the course of a virus pneumonia that had begun with an influenza-like process. Oliguria and anuria with renal insufficiency and acute uremia developed. Application of heat to the kidneys, infusion of sodium chloride, the forcing of water and paravertebral anesthesia were ineffective. Application of roentgen rays to the region of both kidneys was followed by a period of polyuria with improvement in the concentration capacity of the kidney and subsidence of the secretory blockage. In the 2 other cases anuria developed in the course of glomerulonephritis. Here again roentgen therapy counteracted the anuria. The author suggests that the anuria resulted from spasms in the interlobular arteries and that the roentgen treatment had a spasmolytic effect on them. The roentgen rays probably exerted their influence by way of the sympathetic nervous system.

Peptic Ulcers and Sympathetic Nervous System.—The observations reported by Nitsch were made in a military unit in which men subject to recurrent gastric disorders had been grouped together. Among the 850 men with chronic gastric disorders there were 324 who had had at least 2 ulcer attacks within the preceding thirty months. These men belonged to a coast guard unit and received the same type of diet, which was not greatly restricted. Alcoholic drinks and smoking had been forbidden. Physical exertion and hours of sleep were similar for all. These 324 men were divided into three groups on the basis of the alphabetic order of their names (in rotation, 1 to each group). Average ages and weights were similar in the three groups. The men in group 1 received no medication; those in group 2 were given 1 tablet of bellergal (a preparation containing ergotamine tartrate, bellafolin® [a preparation of belladonna alkaloids] and phenobarbital) three times daily and also 1 tablet of phenobarbital three times daily. Those of group 3 were given this medication only when they were losing weight (more than two thirds of a pound [0.33 Kg.] a week) or when there was a noticeable increase in sympathetic dystonia. Subjectivism was avoided, in that the physician did not know what group a man belonged to; the men did not know why they had to take the tablets. Recurrences of ulcer appeared in 38 men of group 1, in 6 of group 2 and in 13 of group 3. Weekly control examinations revealed that the subjective symptoms that accompany a recurrence of ulcer usually are preceded for a week or two by signs of increased sympathetic dystonia. In evaluating whether the medicinal treatment which under these conditions was begun in group 3 was effective in preventing a relapse, the author says that during a four month period the relapse rate was 17 in group 1 and 10 in group 3. The purpose of the study was to determine whether the tendency to relapse could be reduced by influencing the sympathetic nervous system by drugs that act on the brain stem. The observations indicate that the sympathetic nervous system plays an important role in ulcer recurrence.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

93:541-616 (Feb. 19) 1949. Partial Index

*Mechanical Heart-Lung System. J. Jongbloed.—p. 548.
Investigation of Causes of Death in 200 Stillborn Infants. B. S. ten Berge and G. Linthorst.—p. 553.

Mechanical Heart-Lung System.—On the basis of experiments in dogs with a mechanical device which takes over the function of the heart and lungs, Jongbloed constructed a heart-lung system with a capacity suitable for human subjects. He describes this apparatus, the most important part of which is a new type of artificial lung, the spiral oxygenator. In experiments on large dogs (over 30 Kg.), in which only half of the apparatus was in use, this new mechanical heart-lung system came up to all expectations.

93:617-692 (Feb. 26) 1949. Partial Index

*Development of Gallstones After Gastric Resection for Ulcer. C. L. H. Majoor, T. J. J. Suren and M. M. Madlener.—p. 626.
Insufficiency of Sphincter of Oddi. H. van Ijzeren.—p. 631.

Gallstones After Gastric Resection.—Majoor and associates present the case of a woman, aged 47, who underwent gastric resection for duodenal ulcer. About two months after the operation she complained of colicky pains in the upper part of the abdomen. Roentgenologic examination of the gallbladder showed small, "swimming" stones, which had not been present before the operation on the stomach. This supports the view that the Billroth II resection may promote the formation of gallstones. Numerous small stones were found in the gallbladder as well as white, sugar-like crystals of cholesterol. These crystals represent probably the first phase in the morphogenesis of gallstones.

93:769-844 (March 12) 1949. Partial Index

Sympathetic Reactions Caused by Stimulation of Labyrinth. J. Hulk and H. E. Henkes.—p. 783.
*Denervation of Joints in Arthritis Deformans. E. A. Immink.—p. 791.
Case of Amebic Hepatitis. J. M. Cannoo.—p. 799.

Denervation of Joints in Arthritis Deformans.—Immink shows that degenerative, toxic-infectious and constitutional factors are involved in arthritis deformans. It was Tavernier who suggested that pain caused by this process be counteracted by denervation of the involved joint. In some instances the author combined Tavernier's denervation with Chapchal's paravertebral sympathetic block. His results in the denervation of twenty hip joints were good (disappearance of pain and great improvement in mobility) in 13 cases, fair (disappearance of pain and some improvement in movement) in 5 and in the other 2 there was no improvement. The denervation of nineteen knee joints gave good results in 11 cases, fair results in 6 and effected no improvement in 2 cases.

Presse Médicale, Paris

57:353-364 (April 20) 1949. Partial Index

*Treatment of Tuberculosis in Early Infancy with Streptomycin. J. Cathala, P. Auzépy, R. Bastin and J. Hartmann.—p 353.
Retarded Penicillin. New Preparations Used for Treatment of Gonorrhea. C. Levaditi, H. Penau, A. Vaisman and G. Hagemann.—p. 355.
New Retarded-Penicillin Preparations for Treatment of Experimental and Human Syphilis. C. Levaditi, H. Penau, A. Vaisman and G. Hagemann.—p. 356.
Contribution to the Study of Topectomy. M. Feld and R. Messimy.—p. 358.

Streptomycin in Tuberculosis of Infants.—Cathala and co-workers report on two years' experience with streptomycin in the treatment of tuberculosis in early infancy. Eighteen infants between 6 months and 3 years of age with tuberculous meningitis were given daily intraspinal injections of 2.5 cg. of the drug for ten to twelve days; later these injections were given twice or once per week. In addition, the infants were given daily 5 cg. of the drug per kilogram of body weight in two injections at twelve hour intervals. Twelve infants died. Three patients were alive and normal, seventeen months, seven months and one month, respectively, after treatment was discontinued; 2 patients were in good condition, but treatment had not been discontinued at the time of reporting. Fifty-two infants, between 2½ months and 3 years of age, 11 with caseous types of pulmonary tuberculosis, 7 with miliary tuberculosis, 14 with primary complex and involvement of juxtatracheal lymph nodes, 16 with primary complex and a favorable prognosis, 3 with tuberculosis of the bones and 1 with tuberculous mastoiditis were given daily doses of 3 to 5 cg. of the drug per kilogram of body weight for six to twelve weeks. Twelve patients died and 40 recovered. Among those that recovered were 3 with miliary tuberculosis and 4 with bronchopulmonary tuberculosis in whom multiple nodules were demonstrated on roentgenologic examination. Treatment with streptomycin proved successful in patients regarded as incurable. Results varied, and treatment was prolonged, painful and expensive. Although complete sterilization of the organism does not seem likely to be achieved, treatment with the drug is advisable for all types of tuberculosis in early infancy, because a primary infection with a grave prognosis may be converted into a benign primary infection permitting the patient to acquire permanent immunity.

Revista Argentina de Reumatología, Buenos Aires

13:262-284 (March) 1949. Partial Index

*Treatment of Rheumatoid Arthritis. M. Losada L. and O. France S.—p. 274.

Treatment of Rheumatoid Arthritis.—Losada and France employed a gold preparation in 136 adult patients with rheumatoid arthritis. Results are recorded in 60 patients given intramuscular injections of sodium gold thiosulfate in doses of 0.01 Gm. with intervals of six days for a first course of five injections followed by injections of 0.05 Gm. of the drug with intervals of fifteen, twenty or thirty days. The disease had existed less than one year in 13 patients and between two and ten years in the remaining patients. Cure was obtained in 19 patients and improvement in 17. In the remaining patients either the treatment had failed or the results were unknown to the authors. Toxic, acute reactions occurred in 20 patients, in 9 of whom the treatment had to be discontinued. Sodium gold thiosulfate therapy is of value in rheumatoid arthritis provided it is administered early in the course of the disease and for a period varying between one or two years. Hepatic, intestinal, renal, blood and skin disease, cardiac insufficiency, asthma, grave diabetes and pregnancy are contraindications. Gold therapy gives mediocre results in patients with spondyloarthritis and with Still-Chauffard and Felty's syndrome.

Semaine des Hôpitaux de Paris

25:755-796 (March 6) 1949. Partial Index

Chair of Rheumatology; Inaugural Lecture. F. Coste.—p. 755.
Plasmocyte Leukosis; Comparison with Kahler's Disease and Leukoblast Leukosis. P. Milliez and J. Mallarmé.—p. 763.
*Aspiration Liver Biopsy by Transthoracic Route. L. Bertrand.—p. 769.
*Subcutaneous and Cutaneous Vaccination with BCG, 1926 to 1948. J. Heimbeck.—p. 771.

Aspiration Liver Biopsy.—Bertrand performed 34 aspiration liver biopsies in eight months on patients with miliary pulmonary tuberculosis who had been treated with streptomycin. On admission some of these patients presented moderate hypertrophy of the liver. More often the liver was normal in size or rapidly became normal with streptomycin therapy. The site of insertion of the needle was either the seventh or the eighth intercostal space in the anterior axillary line. Liver puncture was done with local anesthesia with 10 cc. of a 1 per cent solution of procaine hydrochloride. The cannula used was 16 cm. in length, 1.5 to 2 mm. in width and fitted with a trocar. The bleeding, clotting and prothrombin times were determined before the puncture. Scapular radiating pain may be experienced in the course of puncture and may persist for several hours, but it seldom requires opiates. The exploration is usually painless.

Puncture never failed in the author's cases. Hemorrhage of the liver did not occur. It can be prevented by a correct technic and by a routine follow-up of the hemostatic status of the patient. In 2 patients the liver was approached through a therapeutic pneumothorax without any difficulty.

BCG Vaccination.—Heimbeck reports on BCG vaccination in two groups during the period 1926-1948. One group consisted of student nurses aged about 20, whose activities and living conditions were similar and who were heavily exposed to tuberculosis. The other was a population group of Oslo, Norway, whose members differed considerably with regard to age and living conditions and were exposed to the common tuberculous infection, which as a rule does not affect more than 2 to 3 per cent of the population per year. In the early years of the employment of this method of vaccination a single dose of 0.05 to 0.10 mg. of the vaccine was injected subcutaneously. Because of the frequent occurrence of an abscess at the site of the injection the subcutaneous route was replaced by the cutaneous route. The vaccine dose of 0.1 mg. was divided in three to five small superficial injections, which produced small anemic papules on the epidermis. Of 501 vaccinated nurses, with a total number of 4,958 years of observation, 49 (9.9 per cent) acquired tuberculosis and 5 (1 per cent) died per 1,000 years of observation. Of 668 nonvaccinated nurses, with a total number of 7,449 years of observation and with a positive Pirquet reaction, 39 (5.2 per cent) acquired tuberculosis and 1 died (0.1 per cent) per 1,000 years of observation, while of 284 nonvaccinated nurses, with 2,563 years of observation and a negative Pirquet reaction, 106 (41.4 per cent) acquired tuberculosis and 12 died (4.2 per cent) per 1,000 years of observation. Thus the immunity obtained by BCG vaccination reduced the morbidity and mortality rate by one fourth, but the immunity produced by the vaccine was less effective than that resulting from a primary infection. Of 842 persons of the population of Oslo who were vaccinated, 9 (1.6 per cent) acquired tuberculosis and none died per 1,000 years of observation. Of 2,836 persons with a negative Pirquet reaction, 190 (8.8 per cent) acquired tuberculosis and 13 (0.6 per cent) died per 1,000 years of observation, while of 2,421 persons with a positive Pirquet reaction 54 (2.7 per cent) acquired tuberculosis and 6 (0.3 per cent) died per 1,000 years of observation. BCG vaccination reduced the morbidity and mortality rate under common conditions of infection to one fifth of that of the nonvaccinated persons. Today BCG vaccine is the best agent for combating tuberculosis.

Ugeskrift for Leager, Copenhagen

111:55-82 (Jan. 20) 1949

Gamma Globulin and Its Clinical Application. Review. A. Hansen and B. Jordal.—p. 55.
*Gamma Globulin in Prophylaxis Against Measles. B. Jordal.—p. 59.
Apparatus for Ambulant Traction Treatment. H. Sørensen.—p. 63.

Gamma Globulin in Prophylaxis Against Measles.—Because of the inadequate supply of measles convalescent serum in Denmark late in 1947, human gamma globulin was prepared and issued interchangeably with convalescent serum in the 1947-1948 measles epidemic. Jordal says that injection of gamma globulin within six days after the first contact gave 91.3 to 93.7 per cent protection and administration of convalescent serum within the same time after contact gave 96.4 to 100 per cent protection. The dosage of gamma globulin was that used in the United States.

111:113-138 (Feb. 3) 1949. **Partial Index**

*Change in Operative Mortality After Suture of Perforated Gastric Ulcer. J. C. Christoffersen and J. Mortens.—p. 113.
Cervical Sympathetic Block in Humeroscapular Periarthrosis with Secondary Reflex Dystrophy. K. Jespersen.—p. 119.

Change in Operative Mortality After Suture of Perforated Gastric Ulcer.—Christoffersen and Mortens' material comprises 213 cases in which there was surgical treatment for repair of perforated gastric ulcer from 1929 to 1948. The operative mortality was reduced from 40 deaths (28 per cent) in the 145 patients treated from 1929 to 1944 to 3 (4 per cent) in the 68 treated from 1945 to 1948. The operative technic was unchanged. Examination of the causes of death from 1929 to 1944 and from 1945 to 1948 shows the great value of sulfonamide drugs and penicillin and of the modern methods of anesthesia and intensive preoperative and/or postoperative treatment of shock which allow the full effect of these agents to be utilized. The importance of immediate availability of sufficient blood (or blood substitutes) for transfusion is stressed.

111:165-200 (Feb. 17) 1949

*Prolapse of Lumbar Disk. E. Busch, A. Andersen, B. Broager and others.—p. 165.
Suggestion for New Technic in Urinalysis. P. E. Oswald.—p. 188.

Prolapse of Lumbar Disk.—Busch and his associates say that prolapse of the lumbar disk is common and is the most frequent cause of lumbago-sciatica with symptoms of radicular compression. Of 1,000 verified cases of lumbar disk prolapse 50.8 per cent were those of the fourth lumbar disk and 41.3 per cent of the fifth lumbar disk. Prolapses may be multiple. Heavy physical work and trauma play a part in the development of the prolapse. In fully half the cases a probable causative trauma was established. The prolapse and its localization can usually be diagnosed on roentgen and clinical examination; myelography is necessary in about 10 per cent of the cases. In most cases operation is not needed. The indication for operative treatment depends on the part the prolapse and its symptoms play in the patient's life. Operation is often indicated in cases with objective signs of radicular compression with sensory or motor loss which do not disappear quickly. The operative indication becomes absolute in cases with extensive compression and spinal block. Follow-up of 738 patients after partial hemilaminectomy, hemilaminectomy, laminectomy or transligamentary operation showed good results in 70 per cent, improvement in 18 per cent, unsatisfactory results in 10 per cent. The unsatisfactory results were mainly due to cicatricial root compression, radiculitis, instability of the affected lumbar disk, miosis and neurosis.

Wiener medizinische Wochenschrift, Vienna

99:161-186 (April 9) 1949

Adams-Stokes Syndrome. O. Zimmermann-Meinzingen.—p. 161.
Histopathology of Ganglion Cells of Sympathetic Trunk in Man. F. Feyrter.—p. 164.
Treatment of Syphilis with Penicillin. N. Getzler.—p. 169.
Aspiration of Uterus as Competitive Method to Smear Curettage. O. Glück.—p. 173.
*Multiple Brain Tumors; Casuistic Contribution. H. Kraus.—p. 174.

Multiple Brain Tumors.—Kraus reports multiple brain tumors in a man aged 29 with bilateral neurinoma of the acoustic nerve (case 1), in a woman aged 67 with a left-sided neurinoma of the acoustic nerve and meningioma (case 2), in a man aged 26 with Recklinghausen's disease (case 3), in a man aged 25 with Recklinghausen's disease and meningioma (case 4), in a woman aged 44 with multiple meningiomas (case 5) and in a woman aged 19 with multiple gliomas (case 6). The first 2 patients died within ten days after admission to the hospital, before any surgical intervention had been carried out. The diagnosis of a bilateral tumor of the acoustic nerve is more difficult than that of a unilateral tumor, because comparison between left and right ventriculography does not reveal any differences. Observation in the first case revealed that dorsal displacement of the aqueduct may be shown on ventriculographic examination in bilateral medial neurinoma of the acoustic nerve. Surgical treatment was attempted in case 3, but operation was discontinued because of profuse hemorrhage. Diagnosis of Recklinghausen's disease may be easy if neurinomas are demonstrated simultaneously in the peripheral nerves as they were in case 3 and 4. Both patients were operated on, and both died soon after. The patient in case 4 did not present choked disk or signs of increased pressure, in spite of the considerable size of the neurinomas. The fifth patient was operated on successfully; four large and twelve small meningiomas with a total weight of 200 Gm. were removed from the brain, and one meningioma was removed from the spinal cord several weeks later. Satisfactory results may be obtained from extensive and radical intervention in multiple meningiomas, but recurrences must be anticipated. The sixth patient died after ventriculostomy had been performed. Necropsy revealed the rare simultaneous occurrence of glioma of the brain and of the spinal cord.

Book Notices

Synopsis of Psychosomatic Diagnosis and Treatment. By Flanders Dunbar, M.D. With the Assistance of Jacob Arlow, M.D., and others, and Members of the Staff of the Departments of Medicine and Psychiatry, Columbia-Presbyterian Medical Center, New York City. Fabrikoid. Price, $6.50. Pp. 501, with illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

In this book many of the leaders in the field of psychosomatic medicine combine to teach their subject on the basis of cases studied in various clinics. The book should be of special interest to the general practitioner who is interested in the technic of this approach to medical problems.

Textbook of Anatomy and Physiology. By Diana Clifford Kimber and Carolyn E. Gray, A.M., R.N. Revised by Caroline E. Stackpole, A.M. and Lutia C. Leavell, R.N., Assistant Professor in Nursing Education, Teachers College, Columbia University, New York. Twelfth edition. Cloth. Price, $4. Pp. 773, with 360 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

This is a new revision of the well known text by Kimber and Gray. Since the last edition, the total number of figures has been increased by seven and the pages by four. There has been some revision of text, legends and cross references. A great deal of material is presented in concise form. In general, the selection of material is good. One omission is unusual: The small muscles of the hand are barely mentioned, whereas the small muscles of the foot are given in detail in the muscle summary and are shown in two illustrations.

Introduction to Physical Biochemistry. By J. M. Johlin, Ph.D., D.Sc., Associate Professor of Biochemistry in the Vanderbilt University School of Medicine, Nashville, Tenn. Second edition. Cloth. Price, $3.75. Pp. 246, with illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 49 E. 33d St., New York 16, 1949.

The author has presented an elementary discussion of some principles of physical chemistry and of their application to biochemistry (principally to the chemistry of blood). The amount of detail presented in the discussions of concepts and theories is meager in some cases, copious in others. There is much valuable information for the biochemistry student. It is unfortunate that the presentation is not as clear as might be desired.

Der Rücken des Menschen, die Erkennung und Behandlung Seiner Erkrankungen: Eine Anleitung für Studierende der Medizin und parktische Aerzte. Von Prof. Dr. med. O. Veraguth, gewesenem Direktor des Universitäts-Institutes für physikalische Therapie in Zürich, und Dr. med. C. Braendli-Wyss, Arzt in Burgdorf (Bern). Unter Mitarbeit von Dr. med. E. Frauchiger, Professor für vergleichende Neurologie an der Universität Bern. Second edition. Cloth. Price, 24 Swiss francs. Pp. 225, with 94 illustrations. Hans Huber, Marktgasse 9, Bern 16, 1948.

This book will be of limited interest to the readers of The Journal. The author discusses anatomic, neurologic, topographic and postural disturbances of the human back. There are some instructive illustrations in the book.

Treatment in General Practice. By Harry Beckman, M.D., Professor of Pharmacology, Marquette University School of Medicine, Milwaukee. Sixth edition. Cloth. Price, $11.50. Pp. 1129, with illustrations. W. B. Saunders Co., 218 W. Washington Square, Philadelphia 5, 1948.

The intensified rapid progress of medicine makes necessary far more frequent revisions of textbooks than were formerly necessary. In the present edition of this well established work, some sections have been rewritten entirely because of new information and the entire book has been brought up to date. The succinct and didactic method of presentation makes this book outstanding as a guide to general practitioners.

Inmovilización: Vendajes—tracción continua—enyesados. Por el Dr. José Pedro Reggi, profesor adjunto de la Facultad de ciencias médicas de Buenos Aires. Cloth. Pp. 326, with 382 illustrations. Lopez & Etchegoyen, S.R.L., Junin 863, Buenos Aires, 1948.

This book is of limited interest to the readers of The Journal. The author has drawn freely from the writings of authors from many countries. He favors the work of Watson-Jones of England and Bohler of Austria. The material, which is elementary, includes information on bandages, slings, adhesive, casts, apparatus, splints, wiring of teeth, traction, suspension, skeletal traction, tongs and Stader apparatus.

Outwitting Your Years. By Clarence William Lieb, M.A., M.D. Cloth. Price, $2.75. Pp. 278. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, 1949.

Leisure is one source of temptation. When a physician retires, not the least of his temptations is to write another book on aging wherein he may once more display his wit and wisdom, give counsel, reiterate certain pet anecdotes concerning some more or less famous patients and indulge in a little wishful thinking in order to reassure himself that his own senescence is not as bad as he fears it is. Such indulgence can make pleasant reading. Dr. Clarence Lieb's style is charming, freely flowing and intimately conversational. His discussion of the major "facts of life" as they apply to senescence and senescents is sound, though the organization of his material is rather confused. For example, arthritis, neuritis, prostatitis and the need for ample time for convalescence are all brought together.

The book should prove particularly helpful to those who fear old age and, lacking the courage or imagination to face it realistically, find solace in such sedative philosophies as those of Coué, Christian Science or the more conventional dependency on religion. The truly mature—emotionally as well as somatically grown up—will find little therein of value to themselves.

The Spleen and Hypersplenism. By William Dameshek, M.D., & Solomon Estren, M.D. A Reprint of an Exhibit Presented at the 100th Anniversary Convention of The American Medical Association, Atlantic City, June 1947. Loose Leaf. Paper, $4.75. No pagination, with illustrations. Grune & Stratton, 381 Fourth Ave., New York 16, 1947.

Here in beautiful reproduction is the exhibit on this subject from the Hundredth Anniversary Convention of the American Medical Association in June 1947. The value of the book for teachers who are concerned with conditions affecting the blood and the spleen is exceedingly great. The work might well offer a suggestion to many other exhibitors, who could thus extend the excellent work they do by their exhibits in medical conventions.

West London Hospital Department of Rheumatic Diseases, Annual Report 1948. Paper. Pp. 40, with 13 illustrations. West London Hospital, London, [n.d.].

The rheumatism department of the West London Hospital was first opened in 1938 with the collaboration of the Empire Rheumatism Council. Since that time its work as a referral center has continuously increased except for the war. It is noteworthy that under miscellaneous "rheumatic" conditions referred to the department were included cases of multiple myeloma, osteomyelitis, herpes zoster, multiple sclerosis, acromegaly, myxedema, malignant diseases and scleroderma. As pointed out in this report, these figures emphasize the fact that a rheumatism department should be part of a general hospital and that workers in this field should have a solid training in general medicine.

Several interesting articles are included in this booklet which may not receive the attention they deserve because of its restricted circulation. One article, which was Dr. W. S. C. Copeman's Hunterian Oration, deals with the rheumatic diseases in the eighteenth century. Other papers are on psychogenic rheumatism by Dr. Philip Hench; on the action of salicylates by Fred. Wrigley, and on the differential diagnosis of prolapse of the "intervertebral disk" by Dr. R. M. Mason.

A Surgeon's Guide to Local Anæsthesia: A Manual of Shockless Surgery. By C. E. Corlette, M.D., Ch.M., F.R.A.C.S., Consulting Surgeon, Sydney Hospital, Sydney, Australia. Cloth. Price, $8.50. Pp. 355, with 200 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1948.

This book is written by a surgeon who has learned the valuable lesson of doing surgical operations with local anesthesia. This has permitted him to develop a technic that is important in avoiding shock. He has made full use of epinephrine, both to anchor the anesthetic and to reduce hemorrhage. Preliminary medication he has relied on, as should be done, in cases in which major operations of considerable duration must be performed with local anesthesia.

The book is written entirely from the point of view of the surgeon who has mastered a technic of local anesthesia so thoroughly that he can perform nearly all his operations without resorting to general anesthesia or, if general anesthesia must be employed, little of the anesthetic agent need be used. The author obviously has found infiltration anesthesia to be the most reliable method of local anesthesia in the operations that he does.

Modern Trends in Public Health. Edited by Arthur Massey, C.B.E., M.D., D.P.H. Cloth. Price, $12.50. Pp. 581, with 42 illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 49 E. 33rd St., New York 16, 1949.

In some respects, this volume can be considered a send-off for what is referred to in the foreword as the "national insurance scheme" put into effect in England in 1948. That it appears during a period of transition is emphasized in his foreword by Massey, who also points out that many of the subjects pertain to topics of current interest. Specific chapters that may be mentioned in that connection are those on "The Idea of a Family Health Club," "Social Medicine as an Academic Discipline," "Housing and the Home—The New Outlook," and "Health Centers in Their Relation to Social Medicine and Public Health."

An attempt is not made to survey the entire field of public health, but nevertheless a rather wide range of subjects is covered by the various authorities who have contributed to the twenty-three chapter symposium. Historical and analytic in their treatment, the writers have made important summary contributions that together provide an interesting and enlighening panoramic picture of where Britain stands as regards public health problems and in what direction and how far the nation may be expected to progress in the near future. Among the authors are consulting physicians, general practitioners, public and industrial health officers, laboratory specialists and university teachers. Indicative of the growing interest in occupational health is the fact that the subject is approached from two points of view, those of the teacher and of the physician actively engaged in industrial health consultative service.

Of special interest in providing data on progress and possible predictions of future advances are the chapters on atmospheric pollution, nutrition, school health service, mental health, chronic rheumatism, tuberculosis, health education and child health. Although direct comparison with American methods and standards is not always possible, readers in this country will find not only that the excellent discussions are of real interest but also that in numerous instances there are parallel problems for solution.

Extensive bibliographies and references are included with most chapters. This will be a most interesting book to reread ten years from now.

Cottonseed and Cottonseed Products: Their Chemistry and Chemical Technology. Edited by Alton E. Bailey. Fats and Oils: A Series of Monographs on the Chemistry and Technology of Fats, Oils, and Related Substances. Editorial Board: A. E. Bailey, T. P. Hilditch, H. E. Longenecker and K. S. Markley. Cloth. Price, $17.50. Pp. 936, with 208 illustrations. Interscience Publishers, Inc., 215 Fourth Ave., New York 3, 1948.

This monograph, dealing with the chemistry and technology of cottonseed, is written by some twenty-five different authors, each treating a different phase of the cottonseed industry.

The book is divided into five general topics, each of which has several chapters. The first section deals with the history of the cottonseed industry and its present status in the various cotton-producing countries of the world. The second and largest section treats in detail the composition and characteristics of cottonseed. This includes sections on the structure of the seed, conditions affecting cottonseed composition, the biologic processes of cottonseed and the various chemical constituents which have been found in cottonseed. The grading and evaluation of cottonseed and its primary products—oil, cake, meal and linters—are discussed in the third section, while the fourth general topic is that of cottonseed processing; that is, the methods used to obtain the primary products. The final section deals with the utilization of the various primary products obtained from the seed. The refining processes are discussed and the nutritional aspects of both oil and meal are treated.

The volume is comprehensive in its scope, treating almost all possible aspects of cottonseed and its products. Its value is enhanced by its numerous footnote references and by fairly complete author and subject indexes.

Lehrbuch der Embryologie. Von Walter Brandt, M.D., Ph.D. Cloth. Price, 56 Swiss francs. Pp. 648, with 472 illustrations. S. Karger, Holbeinstrasse 22, Basel, 1949.

For many years premedical students studied embryology as a part of their general education in zoology and as a necessary, often tedious approach to an understanding of human anatomy. In the different medical schools varying degrees of attention are paid to embryology, although the courses in obstetrics usually stress the study of early human embryos with particular reference to implantation and placentation. As descriptive embryogenesis, even of the mammals, covers such a vast field, it is natural that many interesting topics receive but scant attention. It is interesting, and heartening to teachers of embryology, that with the advent of surgery of developmental defects of the heart, the embryogenesis of the organ has become a focus of interest to many medical students and especially to young physicians. This subject, formerly considered dry and uninteresting, and usually covered in a cursory manner, is now an important medical topic. The present extensive volume, in German, with a combined morphologic and dynamic approach to embryology, was aimed at supplying the needs of the medical student. There are numerous summaries of the accomplishments of experimental and comparative embryology, in addition to a detailed presentation of the morphogenesis of the human embryo. Among the most interesting parts of the book are the diagrams showing relative growth rates in the different parts of the body. The observations on very early human embryos and the thorough study of primate development in this country have greatly advanced the gaps in our knowledge of the early stages of human development, and these topics are well covered in the present text. The book can be recommended to anyone seeking a presentation of human embryogenesis as an active process. As a text for students in this country, it does not appear to be superior in any way to several of the English and American books now available.

Kurzgfasstes Lehrbuch der Erkrankungen des Ohres, der Nase und des Halses. Von Dr. med. Alfred Güttich. Boards. Price, 16 marks. Pp. 257, with 126 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O, 1948.

This work is an example of the sort of short text for practitioners in which the Germans excelled in the period before the last war. It is authoritative, concise and well illustrated and contains enough of anatomy, pathology and theoretical considerations to make it understandable. Obviously, conditions in Germany during the war years and since have not been favorable for scholarship and its enterprises. The impact of the sulfonamide drugs, penicillin and the numerous other antibiotics which have changed the aspect of whole categories of disease does not seem apparent in this work.

The mention of the sulfonamide drugs and penicillin, in fact, is hardly more than casual, almost deprecatory and with allusion to the dangers of the so-called masking effect. There seems to be hardly any understanding that acute mastoiditis and its complications, for example, have practically disappeared. This applies, in part, to many of the other acute inflammations in the area of the ear, nose and throat.

This is not to say that such texts as these are without value. For the basic information as to the manner in which disease enrolled itself prior to the antibiotic days is here. If one may be permitted a melancholy reflection, it is sad to think how far behind that country is today, whose investigators and teachers did so much to establish this special field of medicine. It is sad to think, too, that the socioeconomic upheavals which followed the war, as they can faintly be judged by this work, have prevented large numbers of sick from obtaining the safety and relief which are seen here in America every day since the amazing advances of the last few years in chemotherapeutics.

The Chemistry and Technology of Enzymes. By Henry Tauber, Ph.D. Cloth. Price, $7.50. Pp. 550, with 56 illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C. 2, 1949.

The current volume replaces the author's "Enzyme Chemistry" and "Enzyme Technology" (Wiley, 1943). Part I is a summary of enzyme chemistry. The author has covered types of enzymes and specific enzymes extensively. The treatment is necessarily not exhaustive, but many references to an extensive bibliography offer ready access to more detailed works.

Part II deals with the technology of enzymes. Processes discussed include the production of yeasts and enzymes and the production and properties of antibiotics, as well as the role of enzymes in alcohol production, baking, brewing, dairy and other food products, medicine, paper, textile and many other industrial applications. Chapters on microbiologic methods for the estimation of vitamins and amino acids and on vitamin-destroying enzymes are included. The author has presented an excellent and thorough treatment of this little publicized field of enzyme technology.

Food Poisoning. By G. M. Dack, Ph.D., M.D., Professor of Bacteriology and Director, Food Research Institute, The University of Chicago. Second edition. Cloth. Price, $3.75. Pp. 184. University of Chicago Press, 58th St. & Ellis Ave., Chicago 37; Cambridge University Press, Bentley House, 200 Euston Rd., London, N.W. 1; W. J. Gage & Co., Ltd., Toronto 2B, Canada, 1949.

The University of Chicago Press offered Dack's book six years ago as the first compilation of a class of etiologically scrambled diseases in which intestinal absorption of poisons, usually bacterial, appears to be the common factor. The book is now revised at many points, none radically, all sufficiently so that readers can be assured that they have recent points of view.

The author's refusal to become overenthusiastic on any phase or participate in the dogma of such bacteriologic Frankensteins as the Salmonella group does him credit. It is still uncertain whether only live Salmonella can cause food poisoning; in fact, laboratory experiments tend to prove otherwise. The weight of expressed epidemiologic opinion, however, appears against an enteric toxin acting without infection. The acute toxic symptoms and frequent short period of incubation remain more than suggestive of intoxication, and, with Salmonella common in eggs, poultry, slaughterhouses and rodents, the infrequency of infection is not explained.

The Staphylococcus problem is not solved. Bacteriophage and other means of typing are all entertaining, but we still cannot recognize enterotoxigenic staphylococci by simple means. The place of the Streptococcus viridans group in food poisoning is not yet clear. The purification of the toxin of botulism has not been turned to practical account, at least not under the oath of Hippocrates.

The charm of the book is in its balance. Clinical diagnosis, laboratory diagnosis, prevention and control, and discussions of etiology and pathogenesis are woven together in an effective and useful pattern.

This book is a concise, comprehensive, current evaluation of the subject of food poisoning and food infection. An excellent and convenient reference for the practising physician, health officer, epidemiologist, sanitarian, food laboratory technician and commercial food products manufacturer.

Die Pathologie des Stammhirns und ihre vegetativen klinischen Bilder, als Erkenntnis und Grundlage der Unfallbegutachtung innerer Krankheiten. Von Wolfgang H. Veil und Alexander Sturm. Second edition. Boards. Pp. 444, with 58 illustrations. Gustav Fischer, Jena 15, 1946.

This is an excellent volume on the nervous connections and pathology of the endocrine glands. The title is slightly misleading; one would expect to find the same sort of material as in English in the books of Weil, Wertham, Hassin or Freeman. Instead the material is largely clinical, and there is almost no discussion of micropathology. Approximately 120 case histories are given. Much of the material is irrelevant.

Although this book was published in 1946 the authors were apparently not in touch with developments in psychosomatic medicine in this country.

Mikro-Methoden: Zur Kennzeichnung organischer Stoffe und Stoffgemische. Von Dr. phil. et med. Ludwig Kofler und Dr. phil. et med. Adelheid Kofler. Boards. Pp. 337, with 151 illustrations. Universitätsverlag Wagner, Innrain 27, Postfach 219, Innsbruck, 1948.

The authors have compiled information on the methods and applications of fusion analysis using a micro melting point apparatus. The apparatus is an electrically heated metal block with a temperature-indicating device and provisions for illuminating and viewing a few crystals of the substance under examination. These are mounted and examined through the microscope during the heating and cooling cycles.

The technics are simple, and the methods are rapid and surprisingly accurate. Methods are described for the determination of melting points, molecular weights, sublimation temperature, refractive index of the melt and qualitative analysis of pure compounds and mixtures. Qualitative analysis is effected by determining the melting point of the pure compound, the eutectic point of mixtures of two known compounds with the unknown, and the refractive index of the melt. Other observations often include such factors as crystal shape, sublimation and appearance of the sample after melting and cooling to recrystallization.

Tables of data for qualitative analysis are given for about 1,000 compounds. This is far from a complete list, but it does include most of the common solid organic compounds. Sufficient constants are included to identify each unknown rather definitely.

Emergency Surgery. Part I; Part II. By Hamilton Bailey, F.R.C.S., F.A.C.S., F.I.C.S., Surgeon and Surgeon-in-Charge of the Genito-Urinary Department, Royal Northern Hospital, London. Sixth edition. Cloth. Price, $25., per set of five parts. Pp. 180, with 289 illustrations; 181-388, with 290-612 illustrations. Williams & Wilkins Co., Mount Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 42-44, Triangle West, Bristol 8, England, 1948.

This book has been completely revised and is now appearing in five parts. The introduction is especially worth reading, for the philosophy of the surgeon who is ready to serve in emergencies.

Part I deals chiefly with transfusion and clysis. Possibly the most valuable discussion concerns drainage. When a master surgeon so definitely expounds his views in such a controversial field, he deserves attention. Every surgical resident should read the chapter on drainage.

Part II deals with perforation of a peptic ulcer and its treatment. Cholecystitis and cholelithiasis are well covered. The author does not favor emergency cholecystectomy in acute cholecystitis. In this country such an operation performed early in selected cases has yielded excellent results. Intestinal obstruction receives fair attention. The etiology and surgical procedures are thoroughly described. However, while the author does mention treatment with intestinal intubation and electrolyte replacement, he does not emphasize these vitally necessary technics.

Modern Foot Therapy. By Reuben H. Gross, M.Cp., Pod.D., Dean, and Chairman, Department of Podiatry, The First Institute of Podiatry, Long Island University, Brooklyn, N. Y. In collaboration with Henri L. DuVries, M.D., Professor of Surgery, The Illinois College of Chiropody and Foot Surgery, Chicago, and others. With chapters by Martin Blass, Pod.D., and others. Edited by Maurice J. Lewi, M.D., President, and Director of Instruction, The First Institute of Podiatry, Long Island University, Brooklyn, N. Y. Cloth. Price, $9.50. Pp. 710, with illustrations. Foot Therapy Publishing Co., 55 E. 124th St., New York 35, 1948.

This book, written in monographic style with the help of numerous collaborators, covers too large a field for a book on podiatry. Much material is not within the purview of the podiatrist. This book is also entirely too complicated and too high sounding; for example, the words "dysbasia pododynia." The erroneous statement is made that weak foot is never cured. Many of the illustrations are poor. The figure of spina bifida is extraneous in a book of this type.

Cardiac Catheterization in Congenital Heart Disease: A Clinical and Physiological Study in Infants and Children. By André Cournand, M.D., Associate Professor, Department of Medicine, College of Physicians and Surgeons, Columbia University, New York, Janet S. Baldwin, M.D., Assistant Professor, Department of Pediatrics, New York University College of Medicine, and Aaron Himmelstein, M.D., Instructor, Department of Surgery, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $4. Pp. 108, with illustrations. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E.C. 4, 1949.

This monograph will serve as an excellent primer for those who wish to familiarize themselves with cardiac catheterization in infants and children. The first part of the book outlines the technic involved and the information to be obtained from this method of study. The second part includes seventeen illustrative cases in which clinical studies have been combined with the results from catheterization in arriving at a diagnosis of congenital cardiac malformations.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

VACCINATION AGAINST SPOTTED FEVER

To the Editor:—A family who has been under my care is planning to spend a vacation in Idaho in an area where Rocky Mountain spotted fever is prevalent. They have been informed that it would be wise for them to have a vaccination or serum injection prior to the intended trip. I would like information concerning prophylactic serum, how to give it and what results can be expected.

Bernard H. Ailts, M.D., Sweetwater, Texas.

Answer.—The Rocky Mountain spotted fever season corresponds to the prevalence of the tick, Dermacentor andersoni in the West and Dermacentor variabilis in the East. In the Rocky Mountain region this season is roughly from March until the middle of June, and in the East from May until the middle of August. It is advisable to complete immunizations about a week or ten days before expected exposure to ticks. The vaccine is available commercially from several of the biologic laboratories and is prepared from the membranes of infected chick embryos. It is usually given as two injections, a week apart, and a booster dose seasonally thereafter. Since the vaccine contains protein from the embryo, a careful history should be taken to rule out possible sensitivity to chicken proteins. The U. S. Public Health Service laboratory at Hamilton, Mont., prepares a limited amount of vaccine each year from the tissues of infected ticks, which can be secured for those patients unable to take the chick embryo material because of sensitivity.

Now that there are two antibiotics available, chloromycetin® and aureomycin, for the treatment of Rocky Mountain spotted fever, the necessity for vaccination against the disease has decreased somewhat.

TREATMENT OF HEPATOMEGALY

To the Editor:—What measures may be of value in treatment of hepatomegaly associated with auricular fibrillation and congestive disease of long standing, aside from adequate digitalis and mercurial diuretics?

Charles Hertzman, M.D., New York.

Answer.—Hepatomegaly associated with congestive disease may be due to one of three pathologic processes: simple chronic passive congestion, "nutmeg liver" (cyanotic atrophy) or hepatic fibrosis (cardiac cirrhosis). The first two conditions will as a rule respond to the measures usually employed in the treatment of the underlying cardiac lesion; these include mercurial diuretics, digitalization and, perhaps most important, a diet low in sodium. An exception has to be made in the occasional case of adherent pericardium, in which the situation may be complicated by the so-called pericarditic pseudocirrhosis of Pick with its characteristic hyperplastic perihepatitis.

The existence of cardiac cirrhosis has been disputed, but many authorities now are of the opinion that from 1 to 7 per cent of the large livers seen in patients with repeated bouts of congestive disease will show a considerable amount of hepatic fibrosis and thus resemble classic Laennec cirrhosis. The condition is difficult, if not impossible, to recognize during life; a persistently low content of albumin in the serum, macrocytic anemia, hypoprothrombinemia and positive results of flocculation tests with thymol reagents or zinc sulfate are suggestive but not necessarily diagnostic. In case of doubt a diet high in protein, vitamin supplements and parenteral liver extract may be useful in treatment.

ANTISEPTICS AND VIRUSES

To the Editor:—What effect do the organic mercurial antiseptics have on filtrable viruses, in the tincture and in aqueous sol?

M.D., Ohio.

Answer.—Few viruses have been tested in a pure state against chemical and other agents. They are resistant to the action of phenol and related disinfectants; coal tar disinfectants are said to be somewhat more effective for their inactivation. Cutting and his co-workers (*J. Bact.* 57: 379, 1947) reported many substances, including alcohols, dyes, metallic compounds and organic acids, ineffective when tested in vivo against virus infection in mice or embryonated eggs. Because of the variable response of the viruses to chemical agents, heat or ultraviolet irradiation are the preferred methods for their destruction. The viruses are also readily destroyed by alkalies.

AXILLARY SWEATING

To the Editor:—What is the most satisfactory method of managing perspiration under the armpits?

M.D., Indiana.

Answer.—Drugs taken internally are not practical for reducing axillary sweating. Atropine is more active against eccrine sweating; that is, sweating other than from specialized glands in the axillas, at the pubis and a few elsewhere. In sufficient dosage to be effective this drug may have unpleasant side reactions. Therefore local applications are the best means for managing perspiration under the arms.

Topical applications attempt to accomplish one of two results—to overcome or mask the objectionable odor or to reduce the amount of sweat. Astringents are usually used for the latter purpose. They include such materials as tannic acid and the tannates in general, formaldehyde, zinc salicylate, aluminum chloride and aluminum phenolsulfonate. These may be irritating and formaldehyde is a common sensitizer to the skin. Aluminum salts may be destructive to clothes, but buffering them with urea helps to overcome this fault.

The deodorizing agents include hexamethylenetetramine, sodium perborate, zinc peroxide, oxyquinoline sulfate and others. They may be used in solutions, creams and powder mixtures. Essential oils and perfumes are used as masking materials. Hexamethylenetetramine may irritate and sensitize. Lamb has found sodium bicarbonate powder mixtures deodorant.

IRIDOCYCLITIS

To the Editor:—What are the latest opinions concerning the causation and treatment of iridocyclitis? Can it be allergic in origin? What are the possibilities of the uninvolved eye's becoming affected? When is it advisable to remove the affected eye?

Charles Hertzman, M.D., New York.

Answer.—Iridocyclitis may be divided into granulomatous and nongranulomatous types. The granulomatous type is characterized by an insidious onset, a torpid course, minimal inflammatory signs and resistance to treatment. The lesion is profoundly modified and influenced by factors of local hypersensitivity and general immunity. This type of inflammation may be due to tuberculosis, syphilis, brucellosis, sarcoidosis, leprosy, sympathetic ophthalmia or herpes zoster ophthalmicus. Nongranulomatous iritis occurs with dramatic rapidity, with inflammation and pain, but tends to clear up quickly without residue. Recurrences are frequent. This type of inflammation frequently follows systemic infections and may be due to organisms arising in a focus of infection or may occur in conjunction with rheumatoid arthritis or gonorrhea. Ocular sensitization to a strain of the streptococci, staphylococci or Neisseria gonorrhoeae is considered the cause.

Treatment is specific when possible, or directed toward desensitization of the ocular tissues if hypersensitivity is demonstrated. Injections of foreign protein, artificial fever, salicylates or antibiotics may be indicated. Pupillary dilation with atropine should be done after acute congestive glaucoma as the cause of the symptoms has been excluded.

Involvement of the opposite eye depends on the cause of the disease. It is usually not necessary to remove the affected eye except when it is blind and painful.

DRIVER'S LICENSE

To the Editor:—1. When is it safe to recommend the restoration of a driver's license to one who has suffered with a convulsive disorder? 2. What criteria should be used in formulating an opinion?

Diomede Guertin, M.D., Skillman, N. J.

Answer.—1. A convulsive disorder is a rather ambiguous term and provides too much latitude for accurate answering of the question. If it is assumed that the convulsive disorder is to be construed as one of the group of cryptogenic epilepsies, then the answer can be based on experiences gathered to date by workers in this field. It is generally felt that a patient who is under complete control for at least one year should be a safe driver. It is to be assumed that in maintaining his license he will remain under such medical control as to continue to keep seizure free.

2. Accurate historical data from the patient and members of his family, such other social information as can be obtained and electroencephalographic studies at yearly intervals. It must be born in mind, however, that patients clinically free of seizures may continue to show electroencephalographic disturbances, but as the electroencephalogram shows improvement or return to normal, it can be assumed that the outlook for control is highly favorable.

CONCENTRATION OF FREE SERUM CHOLESTEROL

To the Editor:—Clinically, various types of injury to the organism (severe acute infection, for example) are known to be accompanied by a decrease in the concentration of serum-free cholesterol and serum cholesterol esters. This may be reproduced in the laboratory with the aid of a number of nonspecific damaging agents. (Acute hemorrhage, however, is an exception and causes an increase in serum cholesterol.) Recent experimental work suggests that the fall in serum cholesterol during acute stress may be closely related to altered adrenocortical function in such circumstances. Recently, under conditions where it was not possible to study hormone excretions directly, we attempted to use indirect methods of judging adrenocortical status. One of the data to be interpreted was a decrease in serum cholesterol values under a particular type of stress. In reviewing the literature on this topic we were unable to find any definite statement on whether patients with Addison's disease or adrenalectomized animals, otherwise suitably maintained, do or do not show the usual fall in serum cholesterol concentration when exposed to infection or other types of stress with organismic damage. Can you supply information on this topic? M.D., Illinois.

ANSWER.—The literature concerning blood cholesterol changes in adrenalectomized animals and patients suffering from Addison's disease contains many contradictory statements. Apparently, the response is largely dependent on the diet, the degree of adaptation to stress and other factors. In adrenalectomized animals, both abnormally low and abnormally high values have been reported, although in the rabbit, after adrenalectomy, the blood cholesterol almost invariably rises in a significant manner.

In Addison's disease, the cholesterol content of the blood is usually decreased, according to Marañòn. He claims that the decrease in blood cholesterol runs parallel with the severity of the clinical symptoms. In later publications, Marañòn and Collazo confirmed the frequent occurrence of hypocholesterolemia in numerous cases of Addison's disease, and they found, furthermore, that injections of cortin restore the blood cholesterol to normal. Medvei observed an increase of the blood cholesterol content in 4 cases of Addison's disease.

Data concerning the influence of cortical steroids and crude cortical extracts are likewise contradictory. It is interesting, however, that in rats sensitized to the toxic actions of desoxycorticosterone by unilateral nephrectomy and a high sodium chloride intake this steroid consistently produces an elevation of blood cholesterol.

PREVENTION OF DENTAL CARIES

To the Editor:—The January 9 issue of *Collier's* had an article on a new dental prophylaxis with zinc chloride-potassium ferrocyanate. Please give the latest opinion concerning fluoride prophylaxis and evaluate the new method mentioned. James E. Wheeler, M.D., Newtown Square, Pa.

ANSWER.—With respect to the topical application of a fluoride solution as a prophylaxis against dental caries, present knowledge would suggest a reduction of about 40 per cent in the group treated. It is essential that the teeth be thoroughly cleaned with pumice (oral prophylaxis) before the first application of the 2 per cent sodium fluoride is made. A minimum of four treatments, which may be given a week apart, is essential.

The zinc chloride–potassium ferrocyanate technic, commonly referred to as the Gottlieb impregnation technic, which was recently reported in *Colliers,* was recently reviewed by the Council on Dental Therapeutics of the American Dental Association. In the January 1949 issue of the journal of that association (pp. 147-148) after reviewing the background and the changes that have occurred in the technic, they state: "As far as the Council can ascertain, the effectiveness of preparations that have been suggested for use in impregnation has not been established. The Council will be pleased to receive further evidence concerning the value of these preparations and will modify its appraisal if their merit is scientifically established."

ACIDIFYING AGENTS AND SODIUM-POOR DIETS

To the Editor:—Please comment on whether the oral administration of dilute hydrochloric acid or ammonium chloride acts synergically to a salt-poor and salt-free diet. R. R. Gutstein, M.D., Kendallville, Ind.

ANSWER.—Dilute hydrochloric acid and ammonium chloride can aid treatment with low sodium diets, either at the outset by accelerating sodium depletion or during the course by maintaining it when dietary control is not sufficiently rigid. The initial effect is urinary acidification with increased secretion of hydrogen ion by tubule cells; secondarily, as the urine becomes strongly acid, sodium is lost into the urine with the excess chloride ion; the final mechanism is compensatory. It consists in increased secretion of ammonium ion by tubule cells. The secretion of ammonia increases to a maximum in three to four days, at the end of which the acidifying agents have little effect in causing sodium depletion. Consequently, for their most efficient use, acidifying agents should be prescribed discontinuously, as, for example, for three days in each week.

In the presence of renal disease, evidenced by failure of urinary concentrating power, administration of sodium-poor diets is in some degree hazardous, since the renal mechanisms for sodium retention are presumably defective. The hazard is greatly increased by use of acidifying agents. This is due to the concurrent failure of the mechanisms of secretion of hydrogen and ammonium ions.

There is some evidence that pregnancy is associated with decreased effectiveness of the mechanisms which protect against acidosis. Here again, the combination of low sodium diets and acidifying agents imposes the danger of acidosis and hyponatremia. With these provisions, the use of an acidifying agent such as ammonium chloride (this in doses of about 1 Gm. four times daily, three days in the week) is a logical adjuvant to treatment with sodium-poor diets.

RESERVOIR FUNCTION OF SPLEEN

To the Editor:—A boy aged 11 was injured in an automobile accident six months ago. His parents state that he was taken to a nearby hospital in an unconscious state but rapidly regained consciousness and complained of pain in the abdomen and left shoulder. Laparotomy was done and a ruptured spleen was removed. He was discharged from the hospital about ten days later apparently well, but the parents state that since the accident he is unable to indulge in strenuous athletics. He tires readily on overexertion but not on moderate exertion. The hemoglobin is normal, (11 Gm. per hundred cubic centimeters), and his differential, white blood cell and thrombocyte counts are within normal limits. The question now arises of partial permanent disability following splenectomy for trauma. As the spleen acts as a reservoir of red cells, contracting on demand, is it probable that the loss of this function could produce abnormal fatigue from strenuous exercise? Thomas Bradley, M.D., Washington, D. C.

ANSWER.—It is generally accepted that severe muscular exertion is accompanied by a slight and transient rise in the red blood corpuscles. According to Barcroft, the spleen acts as a reservoir for red cells in animals and during exercise it contracts and discharges cells into the circulation. In man, there is evidence that the spleen does not have a reservoir function. Ebert and Stead (*Am. J. M. Sc.* 201:655, 1941) found that exercise caused an increase in the hemoglobin and volume of packed cells in both normal and splenectomized persons and that this was associated with a decrease in plasma volume. Nylin (*Am. J. Physiol.* 149:180, 1947), using red cells labeled with radiophosphorus, observed no change in the total circulating red corpuscles after heavy work. The abnormal fatigue experienced by the patient in the query is probably not related to a loss of a reservoir function of the spleen.

RHEUMATIC VALVULAR DISEASE

To the Editor:—A sturdy young man, age 34, came to my office complaining that his heart missed a beat occasionally. He said that he had acute rheumatic fever with definite heart disease at age 17. He lost a year of school on this account but made such a good recovery that he was accepted for all high school athletics, even playing on the football team. He has not had another attack of rheumatism since, has enjoyed perfect health and can do hard work. He is 6 feet 1¼ inches (186 cm.) tall and weighs 165 pounds (74.8 Kg.). He has a loud diastolic murmur, loudest below the apex, not transmitted to the axilla or the back. The left border of the heart is 1 cm. outside the nipple line. At the age of 17 he measured, on a physician's scales, 6 feet 3 inches (190.5 cm.). How do you account for a decrease in height of 1¼ inches in a young man of his age without spinal trouble? Is his record of rheumatism and mitral stenosis unusual?

A. T. Blackly, M.D., Portland, Ore.

ANSWER.—An explanation for the slight shrinkage in this young man's stature is not apparent. It may be added, however, that there may be normally a decrease in height up to 1 inch (2.5 cm.) in the average person at the end of the day as compared with measurements taken shortly after arising in the morning.

The record is not remarkable as regards the rheumatic history and subsequent valvular disease. It is well known that during acute rheumatic fever murmurs suggestive of valvular disease may subsequently disappear. It is also well known that years later the characteristic signs of mitral stenosis may appear without necessarily recognizable intervening rheumatic activity.

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Bland, E. F.; Jones, T. D., and White, P. D.: Disappearance of the Physical Signs of Rheumatic Heart Disease, J. A. M. A. **107**:569 (Aug. 22) 1936.

Bland, E. F., and Jones, T. D.: The Delayed Appearance of Heart Disease After Rheumatic Fever, J. A. M. A. **113**:1380 (Oct. 7) 1939.

INFECTIOUS MONONUCLEOSIS

To the Editor:—Is there any specific medication for infectious mononucleosis. The patient is a white girl, age 16, with nontender enlargement of cervical, submaxillary, submandibular and postauricular nodes. The throat is inflamed; the temperature is 100.6 F., and the spleen is not palpable. The diagnosis was confirmed by a white blood cell count of 17,800, with 69 per cent lymphocytes, of which 50 per cent were atypical.

M.D., New York.

ANSWER.—No specific therapy has yet been found for infectious mononucleosis. Aureomycin is said to have produced encouraging results in certain preliminary observations, but it is still too early for final conclusions. On the other hand, if the patient is treated in the same manner as a patient with viral hepatitis, both the severity and the duration of convalescence can be materially decreased. There is now ample evidence that hepatitis is almost always present in mononucleosis and is usually the most important pathologic lesion. The clinical picture and the course of the hepatitis are almost identical with those seen in viral hepatitis.

SOMNIFENE® IN OBSTETRICS

To the Editor:—What are the advantages and the disadvantages of somnifene® as an anesthetic in obstetrics? What is the best way of using it?

Denis Stein, M.D., Nouveau, Brunswick, Canada.

ANSWER.—Somnifene® (a mixture of the diethylamine salts of diethylbarbituric acid and allylisopropylbarbituric acid) has not been the subject of any paper in an American journal as far as is known. It has been mentioned in the French literature but not in recent years. In the 1936 Yearbook of Obstetrics and Gynecology, page 164, J. P. Greenhill says: "The study by H. Vignes and J. Chatain (*Presse méd.* **43**:1748, Nov. 9, 1935) deals with the effect of derivatives of barbituric acid, namely, evipan, somnifen, pernocton, etc., on labor pains. The authors found that the chief danger of these drugs was excitation of the patient, which occurred in about 25 per cent of all cases. It is possible to decrease this by the use of morphine and pantopon, but there may result an accumulation of the drugs dangerous for the baby. However, in a large proportion of cases the mothers are relieved of the pains of labor, especially during the second stage."

SENSITIVITY TO LIVER

To the Editor:—I have a patient who, many years ago, required blood transfusion regularly and then started taking liver. She took liver orally and later by injection. She has now an allergic reaction to liver. What can you suggest?

S. Bernard Ross, M.D., New York.

ANSWER.—It is assumed, of course, that the patient has pernicious anemia and therefore must have liver in some form. If the effective principle, vitamin B_{12}, can be obtained, this would probably be the best solution. Otherwise, it is sometimes possible, by trying a variety of different brands of liver extract, to find one to which the patient is not sensitive. Various methods of desensitization have been described, but they are only moderately effective.

CHRONIC BLEPHARITIS

To the Editor:—Can vioform® (iodochlorohydroxyquinoline), 1 per cent in an ointment vehicle, be used in treatment of chronic blepharitis?

Walter Weinberger, M.D., Altoona, Pa.

ANSWER.—Iodochlorohydroxyquinoline contains 41 per cent iodine. Because of its insolubility it does not cause gastrointestinal irritation or toxic effect when taken internally. The drug has been used as a nonirritating surgical powder, has been administered internally and in enemas as an amebacide, and applied locally for vaginitis due to Trichomonas. Three per cent in petrolatum or cream (water-washable base) has been employed for atopic dermatitis, eczema and psoriasis. There should not be an objection to use of 1 per cent vioform® in a petrolatum base for the treatment of chronic blepharitis.

PSYCHOSIS IN A MENTALLY DEFECTIVE PERSON

To the Editor:—What constitutes a psychosis in a mental defective patient? Can an idiot become psychotic?

W. W. Dreher, M.D., Whitfield, Miss.

ANSWER.—The criteria for psychosis in a mentally defective person are the same as those for other subjects. Any type of psychosis may develop, from confusional states to organic syndromes. The intellectual deficiency of mentally defective persons is not a psychosis. An idiot or any other mentally defective person may become psychotic.

RH INCOMPATIBILITY AND ABORTIONS

To the Editor:—A woman, age 43, married seventeen years, with Rh-negative Kahn-negative reactions, whose physical condition is excellent and genitalia normal, has had several pregnancies with spontaneous abortions occurring at two months, three months and four months. The husband is healthy, middle aged, with Kahn-negative and Rh-positive reactions. Is the Rh factor a contributing factor in her abortions and, if so, is there any method known to combat the incompatibility? This woman is desirous of bearing a child.

Walter R. West, M.D., Idaho Falls, Ida.

ANSWER.—Evidence is not available that Rh incompatibility is responsible for early abortions. The blood of the woman should be tested for Rh antibodies. Their presence would establish sensitization to the Rh factor, though not necessarily the responsibility of the Rh incompatibility for the abortions. A connection between the Rh incompatibility and the abortions could be established only by finding erythroblastosis in the fetuses by autopsy. However, even if Rh incompatibility were shown to be responsible for this woman's abortion, there is, at present, no known way of correcting the condition. Other possible causes of early abortions should be investigated.

TREATMENT OF VINCENT'S INFECTION OF THE MOUTH

To the Editor:—In Queries and Minor Notes, The Journal, April 23, 1949, page 1238, a question appears regarding recurrent oral Vincent's infection. The suggested treatment includes the use of silver nitrate solution following scaling. It also states that peroxide mouth washes have questionable value.

The use of a caustic (silver nitrate, chromic acid) as a general therapeutic agent in the treatment of Vincent's infection is frowned on. The destruction of tissue which results is nearly always permanently disfiguring.

Since spirilla and fusiform bacilli are found in many mouths not exhibiting signs of Vincent's infection, a smear should be used merely as a guide to diagnosis and is not pathognomonic.

The treatment which I have found uniformly successful follows:

An immediate scaling of the debris and affected areas, the extensiveness of scaling dictated by the patient's tolerance to pain. Scaling is accompanied with frequent spraying with hydrogen peroxide diluted 50 per cent with warm water. Penicillin troches are prescribed, or in acute conditions procaine penicillin, 300,000 units, may be injected intramuscularly.

Tobacco, alcohol, salt and spicy foods are prohibited at once. The patient is given a new toothbrush. Home care consists of frequent rinsing with hydrogen peroxide diluted 50 per cent with warm water.

After twenty-four hours, the patient commonly returns with all acute symptoms relieved. At this time intensive scaling is started. If there is found to be a malocclusion that can be corrected by grinding, this is done concomitantly with the scaling. Rough fillings, carious teeth, third molar flaps, poor fitting crowns and bridges all act as foci and incubation areas and are eliminated as soon as possible.

The office treatment, which consists of scaling and correction of occlusion, usually requires three to six visits. During this time the patient is instructed in home care, tooth brushing and oral hygiene, and advice is given regarding a balanced diet.

After a clinical cessation of symptoms, tobacco in moderation and normal dietary habits may be resumed.

Julius Schaffer, D.D.S., New York.

PROTEIN-BOUND IODINE

To the Editor:—Your answer to the question on page 814 of the March 19 Journal on protein-bound iodine is in error. Administered iodine, whether as Lugol's solution, gallbladder dye or inhaled iodine from spilled solutions, will raise the protein-bound iodine fraction. This should in no way interfere, however, with determination of the activity of the thyroid gland by use of blood iodine levels, since this technic properly done measures the falsely high bound iodine and then discards it through hydrolysis to give a figure that is the true index of the gland's activity. A case occurred at a New Haven hospital wherein the intern surreptitiously did an iodized oil study of the spinal canal to try to prove his diagnosis of tumor. The patient, who had myxedema, showed high total and protein-bound iodine levels for weeks. The significant protein-bound fraction remained in the myxedematous range.

L. S. Wolfe, M.D., New Milford, Conn.

To the Editor:—I think I can add to the information given by your consultant regarding the effect of gallbladder dyes on the protein-bound blood iodine.

In my paper "The Nature of the Blood Iodine and Its Determination" (*J. Lab. & Clin. Med.* **28**:329, 1942) the effect of a series of organically bound iodine compounds on the protein-bound blood iodine is reported. All these compounds increase the protein-bound blood iodine, and at present chemical methods are not available for separating this from the normally occurring protein-bound blood iodine. The usual methods that will separate inorganic iodine are not of avail. We have carried out studies showing that the protein-bound blood iodine is elevated for at least two months after a single dose of any of the commonly used gallbladder dyes. This is probably due to the recirculation of the dye following its excretion in the bile and reabsorption from the intestinal tract. For the information of your correspondent, I should say that significant determinations of the level of protein-bound blood iodine cannot be made by present methods for at least several months after the administration of a gallbladder dye.

Solomon Silver, M.D., New York.

The Journal of the
American Medical Association
Published Under the Auspices of the Board of Trustees

VOL. 141, No. 3 CHICAGO, ILLINOIS SEPTEMBER 17, 1949
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PAINLESS JAUNDICE

Chairman's Address

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New York

A discussion of painless jaundice should be preceded by some qualification of the title. Pain is a subjective phenomenon for which there is no reliable gage, and its estimation is based on the patient's description and reactions. The great variations in degree of pain to what appears to be approximately the same stimulus are well known, and when the term painless is used it is to be interpreted in a relative sense. The scope of jaundice for the purposes of the present discussion is limited to the types directly related to the liver parenchyma and to the biliary passages.

TYPES OF JAUNDICE

Jaundice directly concerned with the biliary system falls into two principal classifications, (1) that due to injury of the liver cells by some form of infection or toxin, and (2) that caused by obstruction of the biliary passages.

When the parenchymal cells of the liver are at fault, jaundice is due to inability of the cells to collect and excrete the normal components of the bile. This leads to an accumulation in the serum of bilirubin which has not passed through the liver and consequently gives rise to an indirect van den Bergh reaction.[1] There is at the same time an increase of urobilin in the urine and feces. Rich [2] has classified this type as retention jaundice, the retention being due to inability of the liver cells to carry out their excretory function with respect to bile pigments.

In the purely obstructive type of jaundice the liver cells excrete the bile pigments, but an obstruction somewhere in the biliary passages prevents the normal flow of the bile into the duodenum. In this event there is reabsorption, or regurgitation, of bile into the blood, probably by way of the lymphatic vessels, and since the bile has passed through the liver cells the van den Bergh reaction is direct. Bilirubin and bile salts appear in the urine, and there is a decrease of urobilin in the feces. This type of jaundice is known as obstructive, or regurgitation, jaundice.[2]

DIFFERENTIATION

If an accurate history can be obtained and early clinical observations and laboratory investigations can be made, the differentiation of the infective or toxic type of jaundice is relatively simple. When a patient under 30 years of age presents himself with a short history of fatigue, general malaise, fever, nausea, upper abdominal discomfort (or it may be described as pain), vomiting and jaundice a presumptive diagnosis of infectious hepatitis is justified. Often there is a history of a cold or influenza occurring about two weeks before the onset. If the physical and laboratory observations are confirmatory, the diagnosis is established. Since the disease is self limited, recovery may be anticipated.

Complacency toward this form of relatively painless jaundice in young adults, however, was badly shaken during the reecnt World War. Through the desire to protect our soldiers against a variety of diseases occurring in the various parts of the world to which they might be sent, mass inoculations of pooled protective serums were given, particularly for the prevention of yellow fever. The inoculations were followed by the outbreak of a type of jaundice which had much in common with the ordinary epidemic acute hepatitis but differed from it to some extent by a longer incubation period, a longer duration, greater severity, greater tendency toward relapse and, in some instances, more disastrous consequences.

Whether acute infectious hepatitis and homologous serum hepatitis are one and the same disease has not been definitely established. Havens [3] found that an attack of serum hepatitis did not produce immunity against infectious hepatitis. Neefe [4] and his associates likewise were unable to demonstrate cross immunity between the two conditions. Watson and Hoffbauer,[5] however, point out that multiple attacks of catarrhal jaundice (infectious hepatitis) in the same person are well authenticated. Paul and Havens [6] apparently regard serum hepatitis as a variant of infectious hepatitis.

A point of practical importance pertaining to both forms of hepatitis is that certain patients sustain permanent damage to the liver. Kunkel [7] and his associates, in a follow-up study of 350 patients who had had hepatitis, found 60, or 17 per cent, who had not recovered in the usual manner. Two presented the clinical picture of severe cirrhosis. Soffer and Paulson [8]

From the Surgical Service of St. Luke's Hospital.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

[1] Schiff, L.: The Differential Diagnosis of Jaundice, Chicago, The Year Book Publishers, Inc., 1946.

[2] Rich, A. R.: The Pathogenesis of the Forms of Jaundice, Bull. Johns Hopkins Hosp. **47**: 338-377 (Dec.) 1930.

[3] Havens, W. P., Jr.: Experiment in Cross Immunity between Infectious Hepatitis and Homologous Serum Jaundice, Proc. Soc. Exper. Biol. & Med. **59**: 148-150 (June) 1945.

[4] Neefe, J. R.; Stokes, J., Jr., and Gellis, S. S.: Homologous Serum Hepatitis and Infectious (Epidemic) Hepatitis: Experimental Study of Immunity and Cross Immunity in Volunteers, Am. J. M. Sc. **210**: 561-575 (Nov.) 1945.

[5] Watson, C. J., and Hoffbauer, F. W.: The Problem of Prolonged Hepatitis with Particular Reference to the Cholangiolitic Type and the Development of Cholangiolitic Cirrhosis of the Liver, Ann. Int. Med. **25**: 195-227 (Aug.) 1946.

[6] Paul, J. R., and Havens, W. P., Jr.: Recent Advances in the Study of Infectious Hepatitis and Serum Jaundice, Tr. A. Am. Physicians **59**: 133-141, 1946.

[7] Kunkel, H. G.; Labby, D. H., and Hoagland, C. L.: Chronic Liver Disease Following Infectious Hepatitis: I. Abnormal Convalescence from Initial Attack, Ann. Int. Med. **27**: 202-219 (Aug.) 1947.

[8] Soffer, L. J., and Paulson, M.: Residual Hepatic Damage in Catarrhal Jaundice as Determined by the Bilirubin Excretion Test, Arch. Int. Med. **53**: 809-813 (June) 1934.

also have described residual hepatic damage in patients who had had infectious hepatitis. It is conceivable that in future years diagnostic studies involving liver function tests may be complicated by permanent changes in the liver that have occurred after attacks of epidemic acute hepatitis or homologous serum jaundice.

TABLE 1.—*Icterus Index*

(Normal Value: 4 to 6 Units)

	No. of Cases	Range of Values	Average Value
Acute hepatitis	35	12.1 to 251.0	80.7
Cirrhosis	31	12.5 to 193.0	48.6
Acute cholangitis	3	11.0 to 83.4	40.3
Carcinoma of pancreas	23	18.2 to 160.0	90,1
Carcinoma of ampulla of Vater	2	13.0 & 78.0	45.5
Carcinoma of common or hepatic duct	2	145.0 & 178.0	161.0
Carcinoma of liver	5	8.6 to 109.0	48.2
Stone in common or hepatic duct	23	9.0 to 233.0	44.8

Surgical interest in the infectious or toxic types of jaundice, in which the liver cells are primarily concerned, is limited chiefly to its differentiation from the obstructive, or regurgitation, types. In addition to the clinical manifestations of the disease, differentiation is facilitated by certain laboratory examinations which will be discussed later.

The obstructive types of jaundice, on the other hand, almost invariably demand a consideration of surgical treatment of the underlying disease. Here again the clinical observations may find support in the laboratory. It is unfortunate, however, that there are no tests in which complete reliance can be placed for the identification of the different types of jaundice. They must be looked on as aids and not as definitive diagnostic methods. Once it is established with reasonable certainty that the jaundice is obstructive, the diagnosis must be carried a step further and a determination made as to whether the obstructing mechanism is in the extrahepatic ducts or concerns the cholangioles within the liver.

ETIOLOGIC CONSIDERATIONS

In the latter category Hanger and Gutman[9] have described jaundice following arsphenamine therapy, which was not of the usual hepatogenous type but appeared to be due to obstruction of the intrahepatic biliary passages. In the cases reported, the laboratory criteria showed little evidence of degeneration of the liver cells. Watson and Hoffbauer[5] also described certain cases of jaundice in which there was relatively normal hepatocellular function in the presence of severe jaundice of the obstructive, or regurgitation, type. In their cases the histologic evidence appeared inadequate to indicate intrahepatic biliary obstruction, and they were of the opinion that the continued regurgitation of bile into the blood stream was due to increased permeability of the cholangioles.

TABLE 2.—*Serum Bilirubin*

(Normal Value: 0.2 to 0.8 Mg. per Hundred Cubic Centimeters)

	No. of Cases	Range of Values	Average Value
Acute hepatitis	12	1.1 to 22.0	8.1
Cirrhosis	11	0.5 to 6.1	3.1
Acute cholangitis	2	2.5 & 12.3	7.4
Carcinoma of pancreas	3	6.1 to 12.0	9.2
Carcinoma of ampulla of Vater	0	....	...
Carcinoma of common or hepatic duct	0	....	...
Carcinoma of Liver	4	1.9 to 13.7	7.8
Stone in common or hepatic duct	8	3.8 to 11.3	7.4

Obviously it is not always possible to be sure whether the cause of an obstructive type of jaundice, as determined by laboratory methods, lies within biliary passages of the liver itself or in the extrahepatic ducts, and in a given case the advisability of surgical therapy must be determined on all the evidence available, both clinical and laboratory. Fortunately, the decision in the great majority of cases is not as complicated as the preceding reports of exceptional cases would suggest. In the final analysis, the principal problems are to determine, first, whether the jaundice is of the obstructive type, and second, if so, whether its cause is extrahepatic and therefore possibly amenable to surgical treatment.

If it can be established that jaundice is of the obstructive type, it may be fairly assumed, with certain exceptions, that the obstructing mechanism lies outside the liver. It then becomes necessary to consider the possible causes in order of their relative frequency and attempt to arrive at a working diagnosis.

TABLE 3.—*Cephalin-Cholesterol Flocculation Test of Hanger*

(Normal Reaction: Negative)

	No. of Cases	Range of Value	Average Value
Acute hepatitis	39	Neg. to 4+	3.4+
Cirrhosis	38	Neg. to 4+	2.5+
Acute cholangitis	3	All Neg.	Neg.
Carcinoma of pancreas	9	Neg. to 3+	0.7+
Carcinoma of ampulla of Vater	1	3+	3+
Carcinoma of common or hepatic duct	1	Neg.	Neg.
Carcinoma of liver	7	Neg. to 4+	1.7+
Stone in common or hepatic duct	20	Neg. to 4+	1+

I. *Carcinoma of the Pancreas.*—In a study of jaundice in 245 patients 40 years of age or more, Schiff[1] found neoplastic disease responsible for 42.6 per cent of the cases, hepatogenous disease for 38.9 per cent and calculi for 14 per cent. The remainder, 4.5 per cent, were due to miscellaneous and undetermined causes. Carcinoma of the head of the pancreas is usually considered a painless disease. In many instances jaundice appears prior to the development of pain, but pain at some stage of the disease is by no means uncommon.[10] It is often described as dull, boring, nagging or burning, but the important point is that it usually does not have the characteristics of pain caused by cholecystic disease or stone in the common duct. Other subjective symptoms, such as weakness, anorexia and nausea, are similar to those caused by less serious diseases but as a rule are more insidious in their development. Physical examination may reveal enlargement of the gallbladder as described by Courvoisier.[11] The laboratory data shown in the tables are characterized by high icteric index, high phosphatase and in the early stages of the disease a relatively low cephalin flocculation (Hanger) reaction. The prothrombin activity, which is decreased, responds to vitamin K, if administered before severe damage to the liver cells has occurred.

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[9] Hanger, F. M., Jr., and Gutman, A. B.: Postarsphenamine Jaundice Apparently Due to Obstruction of the Intrahepatic Biliary Tract, J. A. M. A. **115**: 263-271 (July 27) 1940.

[10] (*a*) Bourne, G.: Pain as the Only Sign of Pancreatic Carcinoma, Lancet **2**: 1326-1327 (Dec. 5) 1936. (*b*) Zollinger, R., and Kevorkian, A. Y.: Surgical Aspects of Obstructive Jaundice, New England J. Med. **221**: 486-488 (Sept. 28) 1939. (*c*) Whipple, A. O.: Diseases of the Pancreas, in Nelson's Loose-Leaf Medicine, New York, Thos. Nelson & Sons, 1945, vol. 5, p. 531. Walters, W., and Snell, A. M.: Diseases of the Gall Bladder and Bile Ducts, Philadelphia, W. B. Saunders Company, 1940, p. 321.

[11] Courvoisier, L. G.: Casuistich-statistische Beitraege zur Pathologie und Chirurgie der Gallenwege, Leipzig, F. C. W. Vogel, 1890.

II. *Carcinoma of the Common or Hepatic Duct.*—The symptoms, signs and laboratory data in carcinoma of the main biliary ducts are practically indistinguishable from those of carcinoma of the head of the pancreas. However, if the lesion is in the hepatic duct, the enlargement of the gallbladder which occurs in carcinoma of the pancreas or common duct is almost certain to be absent.

III. *Carcinoma of the Ampulla of Vater.*—Carcinoma of the ampulla of Vater deserves special consideration. Although many of the symptoms are the same as those occurring in carcinoma of the pancreas, or main biliary channels, there are certain noteworthy differences to which Cooper[12] has called attention: (1) pain is frequently an early symptom, (2) occult blood in the stools and secondary anemia are relatively constant observations and (3) roentgenologic changes in the second portion of the duodenum are frequently recognizable.

The surgical treatment of carcinoma of the ampulla offers a somewhat better prognosis than does that for carcinoma of the main biliary ducts and head of the pancreas. It is more accessible for resection, and Cooper[12] recorded metastasis in only about 20 per cent of the cases reviewed.

TABLE 4.—*Thymol Turbidity*

(Normal Value: 0.1 to 5.0 Units)

	No. of Cases	Range of Values	Average Value
Acute hepatitis	17	1.0 to 25.5	13.3
Cirrhosis	17	1.1 to 16.9	6.8
Acute cholangitis	2	2.3 & 5.3	3.8
Carcinoma of pancreas	6	0.6 to 7.8	3.5
Carcinoma of ampulla of Vater	0	....	...
Carcinoma of common or hepatic duct	1	0.5	0.5
Carcinoma of liver	6	1.5 to 16.7	7.4
Stone in common or hepatic duct	20	0.9 to 19.6	4.3

IV. *Carcinoma of the Liver.*—Carcinoma of the liver may be primary but is more often metastatic. When primary it often develops on a cirrhotic basis, a fact which may cause some confusion in the interpretation of laboratory data. Jaundice is caused mainly by encroachment of the tumor on the biliary passages but may be caused also by damage to liver cells through interference with their circulation.

V. *Stone in the Common or Hepatic Biliary Ducts.*—Calculous obstruction of the main biliary passages, usually the common duct, ordinarily follows a history of cholecystic disease with repeated attacks of the characteristic severe pain which radiates to the back or scapular region, is associated with nausea and vomiting and is followed by tenderness in the gallbladder region and often by transient jaundice.

When evidence of biliary obstruction follows such a history, the laboratory data may be expected to conform to the clinical observations and the diagnosis early in the disease is not difficult. As a rule the obstruction is not complete; the serum bilirubin level, though elevated, is not excessively high, and secondary changes in the liver are not appreciable. However, if the obstruction is complete, or nearly so, and persists over a long period of time, the liver cells suffer from back pressure of the bile, there is interference with their blood supply and they may undergo atrophy. The obstruction which at first was simple becomes complicated by parenchymal changes in the liver, and one no longer is dealing with a simple disease. The disease may be further altered by the presence of infection with the development of cholangitis. In reaching a diagnosis in such a case the clinical history is likely to prove more valuable than results obtained from laboratory studies which are sensitive to the pathologic complexities of the condition.

TABLE 5.—*Cholesterol and Cholesterol Esters*

(Normal Values: Cholesterol, 150 to 300 Mg., and Esters, 105 to 210 Mg., per Hundred Cubic Centimeters)

	No. of Cases		Range of Values		Av. Value	
	Chol.	Chol. Esters	Chol.	Chol. Esters	Chol.	Chol. Esters
Acute hepatitis	29	21	135 to 283	53 to 219	202	113
Cirrhosis	23	19	91 to 903	13 to 222	240	118
Acute cholangitis	3	1	142 to 383	128	251	128
Carcinoma of pancreas	14	10	118 to 312	46 to 249	255	168
Carcinoma of ampulla of Vater	2	1	202 & 227	118	215	118
Carcinoma of common or hepatic duct	1	1	228	122	228	122
Carcinoma of liver	4	3	262 to 370	168 to 258	329	222
Stone in common or hepatic duct	13	9	153 to 600	93 to 167	261	124

The inclusion of stone in the common duct in a study of painless jaundice is justified because in a small percentage of such cases the jaundice caused by the calculous obstruction is not preceded or accompanied by pain. It is probable that in some cases pain or discomfort is experienced by the patient but is so slight that it is not interpreted as pain. In Zollinger's[10b] study of 75 cases of stone in the common duct, 91 per cent gave a history of biliary colic; presumably the remaining 9 per cent did not. In the 25 cases of common duct stone which I have reviewed there were 3 patients, 15 per cent, with common duct stone in which the history specifically stated that there was no pain.

TABLE 6.—*Serum Albumin and Globulin*

(Normal Values: Albumin, 4.6 to 6.7 Gm., and Globulin, 1.2 to 2.3 Gm. per Hundred Cubic Centimeters)

	No. of Cases		Range of Values		Average Value	
	Serum Albumin	Globulin	Serum Albumin	Globulin	Serum Albumin	Globulin
Acute hepatitis	30	30	2.9 to 6.0	1.4 to 4.7	4.3	2.6
Cirrhosis	34	34	1.8 to 5.1	1.1 to 7.0	3.3	3.4
Acute cholangitis	2	2	4.4 & 4.9	2.2 & 2.6	4.7	2.4
Carcinoma of pancreas	17	17	2.0 to 6.0	1.7 to 4.1	3.9	2.3
Carcinoma of ampulla of Vater	2	2	3.4 & 3.6	2.3 & 2.7	3.5	2.5
Carcinoma of common or hepatic duct	1	1	3.2	2.1	3.2	2.1
Carcinoma of liver	5	5	3.7 to 5.4	1.8 to 3.2	4.4	2.7
Stone in common or hepatic duct	11	11	2.8 to 6.4	1.6 to 3.6	4.4	2.4

It is in this type of case that laboratory methods of diagnosis are particularly useful. They are also of value

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12. Cooper, W. A.: Carcinoma of the Ampulla of Vater, Ann. Surg. **106**: 1009-1034 (Dec.) 1937.

in determining the extent of hepatic damage. In his work on strictures of the common bile duct Walters [13] found the degree of response of the prothrombin time of the blood to vitamin K and the amount of serum globulin and its relation to the serum albumin the most practical indicator of the degree of injury to the liver.

TABLE 7.—*Alkaline Phosphatase*

(Normal Values: 2 to 3.5 Units)

	No. of Cases	Range of Values	Average Value
Acute hepatitis	32	2.3 to 13.6	7.4
Cirrhosis	30	2.7 to 34.8	9.0
Acute cholangitis	3	6.4 to 14.4	10.1
Carcinoma of pancreas	18	7.4 to 24.4	14.3
Carcinoma of ampulla of Vater	1	14.8	14.8
Carcinoma of common or hepatic duct	2	14.1 & 18.6	16.3
Carcinoma of liver	3	8.7 to 16.5	12.6
Stone in common or hepatic duct	21	*4.4 to 34.0*	12.2

VI. *Cirrhosis of the Liver.*—Jaundice occurring in chronic hepatitis (cirrhosis) is a late manifestation of the disease and is not, as a rule, pronounced. By the time clinical jaundice appears, a diagnosis of cirrhosis is likely to have been already established. Cirrhotic jaundice probably is of mixed regurgitation and retention types due to cicatricial constriction of the cholangioles and to cellular damage caused by cicatricial interference with blood supply. Extrahepatic obstruction occasionally occurs when pancreatitis is associated with the cirrhosis. The serum protein usually shows a relative increase in globulin with a decrease in albumin. The cephalin-cholesterol flocculation test of Hanger [14] as a rule is positive, and there is often sulfobromophthalein sodium retention. The differentiation to be made is mainly between cirrhosis of the liver and carcinoma. Final diagnosis may depend on peritoneoscopy or biopsy, though both procedures involve some risk to the patient.

TABLE 8.—*Average Values Obtained in Jaundice-Producing Disease*

Normal Values:	Icterus Index, 4 to 6 Units	Serum Bilirubin, 0.2 to 0.8 Mg. per 100 Cc.	Hangar Test, Negative	Thymol Turbidity, 0.1 to 5.0 Units	Cholesterol and Cholesterol Esters: *Cholesterol...150 to 300* Esters........105 to 210 Mg. per 100 Cc.		Serum Albumin and Globulin: Albumin......4.6 to 6.7 *Globulin......1.2 to 2.3* Mg. per 100 Cc.		*Alkaline* Phosphatase, 2.0 to 3.5 Units
					Cholesterol	Esters	Serum Albumin	Globulin	
Acute hepatitis	80.7	8.1	3.4+	13.3	202	113	4.3	2.6	7.4
Cirrhosis	48.6	3.1	2.5+	6.8	240	118	3.3	3.4	9.0
Acute cholangitis	40.3	7.4	Neg.	3.8	251	128	4.7	2.4	10.1
Carcinoma of pancreas	90.1	9.2	0.7+	3.5	255	168	3.9	2.3	14.3
Carcinoma of ampulla of Vater	45.5	...	3+	...	215	118	3.5	2.5	14.8
Carcinoma of common or hepatic duct	161.0	...	Neg.	0.5	228	122	3.2	2.1	16.3
Carcinoma of liver	48.2	7.8	1.7+	7.4	329	222	4.4	2.7	12.6
Stone in common or hepatic duct	44.8	7.4	1+	4.3	261	124	4.4	2.4	12.2

COMMENT

The bile, or icterus, index and the serum bilirubin determinations as shown in tables 1 and 2 have no real specificity, but the degree of jaundice has some diagnostic significance, particularly in the obstructive lesions of the extrahepatic ducts. Obstruction due to cancer of the ducts or the head of the pancreas ordinarily gives a higher value than obstruction due to stone. Cancer of the ampulla of Vater, however, gives a relatively low reading because the obstruction is prevented from becoming complete by the constant breaking down of the tumor. The icterus index in the parenchymatous diseases of the liver depends largely on the stage of the disease at which the determination is made and shows variations too wide to be of any great diagnostic value.

The particular value of the cephalin-cholesterol flocculation test of Hanger [14] (table 3) is in the differentiation of the parenchymatous from the obstructive types of jaundice. In acute hepatitis, for example, the Hanger reaction is likely to be strongly positive early in the disease, whereas in the obstructive lesions the reaction is at first negative or mildly positive and becomes more strongly positive only after the liver cells have been injured.

The results of the thymol turbidity test of Maclagen [15] (table 4) closely parallel those of the Hanger test. The reaction in acute hepatitis is strongly positive, but in the presence of obstructive lesions it is likely to be normal or nearly so.

In acute infectious hepatitis and other parenchymatous diseases of the liver there is generally a reduction of cholesterol and its esters in the blood (table 5). In the obstruction group of lesions, however, the cholesterol content of the blood is increased. The changes in these small groups of cases do not appear particularly striking.

Determination of the ratio of serum albumin to globulin has its principal value in the differential diagnosis of cirrhosis of the liver. In this disease the value of the globulin fraction approaches and often exceeds that of the albumin fraction (table 6).

The determination of alkaline serum phosphatase has its principal usefulness in distinguishing jaundice due to injury of hepatic cells from that caused by obstructive conditions. In table 7 it will be observed that the average values in the nonobstructive or hepatocellular diseases is below 10 Bodansky units, whereas in the obstructive conditions the average values are above 10.

The normal values given in the tables apply specifically to the laboratory of St. Luke's Hospital. In certain cases the results of laboratory tests do not conform closely to those which are expected in the particular disease, but average values are fairly consistent. Not all of the laboratory data are tabulated, but results are shown for the tests most widely employed.

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[13] Walters, W.: Physiologic Studies in Cases of Stricture of the Common Bile Duct, read at the meeting of the American Surgical Association, April 20-22, 1949.

[14] Hanger, F. M.: Serological Differentiation of Obstructive from Hepatogenous Jaundice by Flocculation of Cephalin-Cholesterol Emulsions, J. Clin. Investigation 18: 261-269 (May) 1939.

[15] Maclagen, N. F.: Thymol Turbidity Test: New Indicator of Liver Dysfunction, Brit. J. Exper. Path. 25: 234-241 (Dec.) 1944.

Highly reliable results can be obtained, as Robinson and Moyer [16] have demonstrated, by a series of relatively simple laboratory tests that can be performed in almost any hospital with basic equipment.

SUMMARY

The diseases that give rise to jaundice are almost invariably associated at some stage with a certain amount of pain. The term painless jaundice is therefore used in a relative sense.

Jaundice directly concerned with the liver and biliary passages is divided into two main types, retention jaundice and regurgitation jaundice. In retention jaundice the hepatic cells are affected and jaundice develops because the cells are unable to perform their normal excretory function. In regurgitation jaundice the cells are active; however, because of obstruction in the extrahepatic biliary ducts or in the cholangioles within the liver, the products of excretion are prevented from reaching the intestinal tract and the bile which has been excreted is eventually regurgitated into the blood.

Certain laboratory procedures have been demonstrated to be of value in the differentiation of the two types of jaundice.

The principal diseases underlying the development of jaundice and the means of their differentiation have been discussed.

Accurate diagnosis of the disease which is responsible for painless jaundice often depends on the use of all possible aids, both clinical and laboratory.

1107 Fifth Avenue.

PERIODIC DISEASE

Periodic Fever, Periodic Abdominalgia, Cyclic Neutropenia, Intermittent Arthralgia, Angioneurotic Edema, Anaphylactoid Purpura and Periodic Paralysis

HOBART A. REIMANN, M.D.
Philadelphia

There are a number of disorders which recur with remarkably regular periodicity over many years without affecting the general health otherwise. In different persons the episodes are characterized by different features, which allow an arrangement of the disorders accordingly into four groups as periodic fever, periodic abdominalgia (benign paroxysmal peritonitis), periodic (cyclic) neutropenia and periodic (intermittent) arthralgia.[1] The name periodic disease was proposed to embrace the conditions in a newly established symptom-complex, but it appears that periodicity of disease was known to the ancients and was ascribed to the influence of solar and lunar cycles.[2] Knowledge of its cause has not progressed much further. Infectious, allergic, endocrinologic, epileptic or migrainous influences have been held responsible; however, as Mead [3] wrote apropos of the subject in 1704, "and thus far the foundation was good, but when a false theory happened to be joined to true observation, this did considerably puzzle the affair."

The object of this paper is to report the subsequent course and further study of cases discussed in a previous article,[1] to describe new cases, to cite reports of cases published by others or furnished in personal communications from physicians and to suggest the inclusion of certain forms of so-called anaphylactoid purpura, angioneurotic edema and perhaps of periodic paralysis among the periodic conditions.

PREVIOUSLY REPORTED CASES

PERIODIC FEVER

CASE 1.—Mrs. N. W., aged 50, whose attacks began in 1936 when she was 37, continues to have periods of chills, fever, nausea and pain in the abdomen, chest and extremities; these last five to seven days and recur every 17 to 22 days in no relation to a normal menstrual cycle. Because of reports by Cooke [4] and Rowe [5] of patients with similar conditions who were relieved of symptoms by withdrawal of certain foods, further studies were directed toward the discovery that some offending protein was the possible cause of the condition. However, a rigid "elimination diet" consisting of lamb, rice, tea, salt and sugar followed for three weeks had no effect on a current episode. The discomfort of so restricted a diet precluded further trial. The patient also spent a month a long distance from her home, likewise without effect on the symptoms. The excretion of porphyrin in the urine was measured in eleven samples collected during four weeks by Dr. Cecil Watson, but all determinations were in the normal range without evidence of fluctuation.

CASE 2.—S. L., a man continues to have weekly episodes of fever and abdominal pain which began in 1938. He was restudied after the report of Gross [6] that regular recurrences of chronic malaria were ended by the injection of testosterone, on the assumption that a cyclic endocrinologic disturbance was the cause. In July 1948 the gonadotropins measured less than 6 international units and the estrogens, 24 mouse units. Testosterone propionate, 50 mg., was then injected intramuscularly twice a week for four weeks, but without effect on the episodes of the patient and without significant changes in the amount of excreted gonadotropins, estrogens or 17-ketosteroids.

Because of a statement in his prior history that relief from the episodes persisted for six months during a period of involuntary restriction of diet, the same elimination diet as that prescribed in case 1 was applied for two weeks. Nonetheless, the regular episode occurred.

Finally, since Moore [7] had described several instance of what he regarded as abdominal epilepsy in which anticonvulsive drugs gave relief, this possibility was considered. However, an electroencephalogram was interpreted as normal and anticonvulsive therapy was not employed.

CASE 3.—E. H., a physician, still has attacks of abdominal pain, fever and leukocytosis at intervals of one week to one month. His condition may be regarded as either periodic fever or abdominalgia.

CASE 4.—L. F. has had cyclic neutropenia and ulcers in his mouth at twenty-one day intervals since 1945. Further studies were made and are reported elsewhere.[8]

CASE 5.—Mrs. C. B. continues to have episodes of arthralgia of the same joints at intervals of fourteen days, which began in 1944.

CASE 6.—A. P., with recurrent myasthenia, died from pneumonia.

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[16] Robinson, J. R., and Moyer, C. A.: Methods for Differential Diagnosis of Painless Jaundice, Surg. Gynec & Obst. **85**: 535-540 (Oct.) 1947.

From Jefferson Medical College and Hospital.

Read before the Section on Internal Medicine at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

[1] Reimann, H. A.: Periodic Fever: A Probable Syndrome Including Periodic Fever, Benign Paroxysmal Peritonitis, Cyclic Neutropenia and Intermittent Arthralgia, J. A. M. A. **136**: 239-244 (Jan. 24) 1948.

[2] Periodic Disease, editorial, Lancet **1**: 565-566 (April 10) 1948. de Rudder, B.: Über Sogenannte "Kosmische" Rhythmen beim Menschen, Leipzig, Georg Thieme Verlag, 1937, pp. 1-45. Kleitman, N.: Biological Rhythms and Cydes, Physiol. Rev. **29**: 1-30 (Jan.) 1949.

[3] Mead, R., cited in editorial.[2]

[4] Cooke, R. A.: Gastrointestinal Manifestation of Allergy, Bull. New York Acad. Med. **9**: 15-24 (Jan.) 1933.

[5] Rowe, A. H.: Fever Due to Food Allergy, Ann. Allergy **6**: 252-259 (May-June) 1948.

[6] Gross, S. J.: Male Hormones for the Prevention of Relapses in Malaria, Indian M. Gaz. **82**: 65-66, 1947.

[7] Moore, M. T.: Abdominal Epilepsy, Rev. Gastroent. **15**: 381-389 (May) 1948; Paroxysmal Abdominal Pain: A Form of Focal Symptomatic Epilepsy, J. A. M. A. **124**: 561-563 (Feb. 26) 1944.

[8] Reimann, H. A., and de Beradinis, C. T.: Periodic (Cyclic) Neutropenia: An Entity; A Collection of Sixteen Cases, to be published.

REPORT OF NEW CASES

PERIODIC FEVER

CASE 7.—H. D., a Negro aged 42, complained of attacks of fever, weakness and headaches. In May 1947 he had a chill, nausea, headache and fever which kept him in bed four or five days. Attacks thereafter occurred about every six weeks, later at approximately four week intervals. When the episodes became severer in January 1948, he entered the hospital for study.

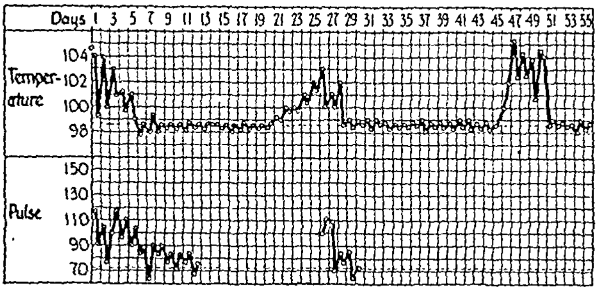

Fig. 1 (case 7).—Episodes of fever with tachycardia recurring every twenty-three days. Record of the pulse rate was made during observation in the hospital.

Physical examination revealed a muscular Negro suffering with an attack of severe chills. His temperature was 40 C. (104 F.), and the pulse rate was 120 (fig. 1). The scleras and pharynx were injected, but no other abnormalities were detected. Examination of the blood did not disclose anemia or sickling. The leukocytes numbered 5,000 and 6,000 with normally distributed component cells. The sedimentation rate by the Cutler method was 21 mm. in sixty minutes. Plasmodia were not found, and reactions to the Wassermann test, cold agglutination test, tuberculin and histoplasmin skin tests and liver functional tests were negative. Roentgenograms of the thorax and long bones revealed essentially normal conditions. The clinical impressions were brucellosis, miliary tuberculosis, Hodgkin's disease or other lymphoma.

The temperature returned to normal, as it had after previous episodes, and the patient left the hospital in apparently good health. He was again admitted three weeks later for an attack of similar nature and with similar negative observations (fig. 1).

At a third admission to the hospital in June, twenty-four days after the preceding one, he appeared to be severely ill, with coughing, temperature of 40.5 C. (105 F.), tachycardia (150) and complaints chiefly of weakness and pains in his calves (fig. 2). The severity and duration of attacks, which now lasted about ten days, increased. Except for rales in the bases of both lungs, all studies were again without significant results. The leukocytes numbered 5,400; the urine contained albumin (3 plus); a blood culture was sterile, and roentgenography did not reveal intrathoracic abnormality. Ten days later, when the temperature was normal, the leukocytes numbered 3,000; a van den Bergh test gave a positive direct result, 18 per cent of sulfobromophthalein sodium was retained and the serum bilirubin measured 1 mg. per hundred cubic centimeters. The proteins of the blood were normal in amount. The cells of the sternal marrow were normal, and no abnormal lymph nodes were palpable. Administration of aminopyrine in doses of 0.60 Gm. reduced the temperature of the patient to normal on two occasions.

The urinary gonadotropins were less than 6 international units, the estrogens 12 mouse units and the 17-ketosteroids 12.9 mg. per hundred cubic centimeters. He then was given testosterone propionate 50 mg. three times a week intramuscularly for three weeks without effect on the episodes. Under observation, the episodes recurred at 25, 22 and 27 day intervals. He left the hospital in good health and returned to work as a chauffeur.

An attack began twenty-eight days after the preceding one had started. He went to another hospital with fever (40.5 C., 105 F.), for which penicillin was given without effect. On his transfer to Jefferson Medical College Hospital, his temperature was elevated (fig. 2). He appeared to be severely ill but significant abnormalities were not found on examination or in laboratory studies. After ten days of fever aminopyrine therapy again brought the temperature to normal. After recovery, the 17-ketosteroids measured 26 mg. per hundred cubic centimeters. There was no evidence of endocrinologic dysfunction. The patient became well again, but he died suddenly during the next episode in August in another city. Unfortunately, further information is not available.

CASE 8.—E. F., a youth aged 17, had had hay fever for ten years, and several members of his family had allergic disturbances. In May 1947 red swellings 2 to 3 cm. in diameter appeared transiently over his body and face, occasionally accompanied with redness and swelling of his phalangeal joints. These attacks disappeared in November 1947. In October 1947 an attack of fever (40 C., 104 F.) had occurred, lasting an hour and causing profuse sweating, dull frontal headache and stiffness of his arms and legs for twenty-four hours. The patient was well until another cycle recurred in fourteen days. Thereafter the episodes took place at two week intervals, and the headache became worse. During one attack a shaking chill was noted.

The patient was hospitalized in June 1948 (fig. 3). Two days later a predicted episode occurred, but examination revealed no other abnormalities except warmth and tachycardia (130). An excised axillary lymph node showed chronic lymphadenitis. The leukocytes before the episode numbered 5,400 with 64 per cent polymorphonuclear cells; during fever there were 11,800 cells with 98 per cent neutrophils, and after the episode there were 4,600 cells, with 43 per cent neutrophils. The sedimentation rate by the Cutler method was 15 mm. in thirty-five minutes. Three blood cultures were sterile. There were no agglutinins for Brucella, and the heterophil antibody test gave a normal result. Plasmodia were not seen. The cells of the sternal marrow were normal. Roentgenograms of the thorax and spine revealed no abnormalities. After two similar episodes, the number of leukocytes fell to 4,800 and 2,900, respectively. A tuberculin test caused no reaction. The basal metabolic rate was —8 per cent during an episode and —20 and —33 per cent in fever-free periods. Six units of crystalline insulin given intravenously caused mild hypoglycemic symptoms in fifteen minutes, without other evidence of endocrine dysfunction. Endocrinologic studies revealed the following: urinary gonadotropins less than 6 international units; estrogens less than 12 mouse units; 17-ketosteroids 2.4 mg. per hundred cubic centimeters; on July 9 gonadotropins were 39 units, estrogens 44 units and 17-ketosteroids 6.6 mg. After these tests were made testosterone propionate 50 mg. was given to the patient intramuscularly twice a week until September 10 (two months). Six days after the first injection the gonadotropins measured less than 6 units, the estrogens 64 units and the 17-ketosteroids 5.7 mg. The episodes (fig. 3) came at intervals of 10, 9, 7, 9, 7, 8, 8 and 12 days. After the patient left the hospital (at the point where the pulse rate curve stops in figure 3) he recorded his temperature at home. The height of the fever declined, the bouts were shorter and the symptoms were milder. This improvement was coincident with testosterone therapy, but it is doubtful whether it was caused by the drug.

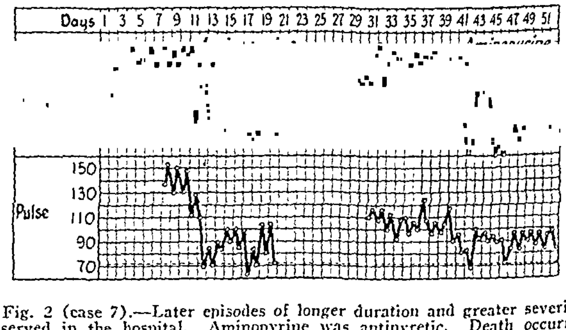

Fig. 2 (case 7).—Later episodes of longer duration and greater severity, observed in the hospital. Aminopyrine was antipyretic. Death occurred in the next episode.

He returned to the hospital September 7. No changes were evident on examination or in the laboratory data. The leukocyte count varied from 3,700 to 4,300 cells. When last heard from in January 1949 he had worked without interruption but had bouts of stiffness of his arms and body and low grade fever "every two or three weeks." The temperature chart which was prepared at home shows four days of fever (37.5 C., 99.5 F.) at 8, 6 and 8 day intervals.

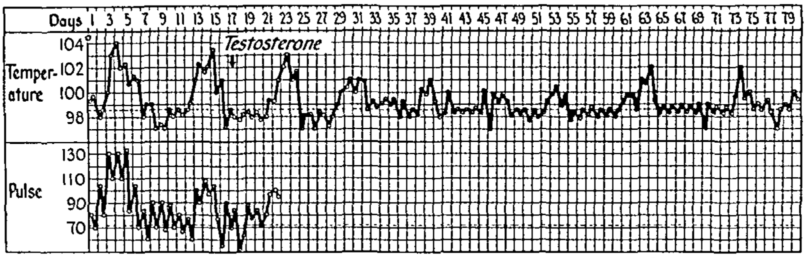

Fig. 3 (case 8).—Episodes at seven to twelve day intervals. The degrees of fever were less after testosterone therapy was begun, but the temperature, after recording of the pulse rate ceases, was measured at home.

Case 9.—Mrs. R. C., aged 50, had menopausal symptoms several months after hysterectomy and oophorectomy were performed in 1944. In June 1945 a shaking chill occurred, lasting thirty minutes. The next week headache began. It started in the evening and was followed by a chilly sensation during the night and temperature which often reached 40 C. (104 F.). The episode lasted twenty-four hours and was followed by a period of relative comfort for twenty-four hours, after which another attack began. This cycle recurred regularly every other day. She entered a hospital for a three week period of observation. Because of the short cycles of high fever and chilliness, malaria was suspected but not proved. Quinine, quinacrine hydrochloride, sulfanilamide and penicillin were given without effect on the febrile periods. The attacks persisted, causing a loss of 22 pounds (10 Kg.) in four months.

In February 1946 therapy with estrogens was begun and continued for a year. The febrile episodes gradually lengthened to three to four day intervals, as illustrated in figure 4. They were not as severe as before but lasted forty-eight hours. She improved somewhat after some of the menopausal symptoms disappeared. In 1947 a physician suspected quartan malaria because of the four day cycles of fever and administered in turn pamaquine naphthoate, quinacrine hydrochloride and quinine, again without effect. The cycles gradually lengthened to seven days. Because of the appearance of abdominal pains at irregular intervals in no relation to the febrile episodes or to food, and because of roentgenologic evidence of gallstones, the gallbladder was removed in February 1948. During her convalescence the febrile episodes were milder, recurring about every seven days; later they became as severe as before. Antipyretic drugs provided transient relief. She felt well between the episodes.

The patient came under my observation in 1948. The febrile episodes were her only complaints except nervousness and occasional aching in the fingers and shoulders. There was no evidence of allergy or other disturbance in the woman or her family.

Examination during an interval or during an episode revealed a healthy looking woman. No significant abnormalities were discovered. All routine laboratory studies made in a hospital in 1945 and at the time of writing gave normal results. The leukocytes during one episode numbered 11,500 with 56 per cent neutrophils, 41 per cent lymphocytes, 1 per cent monocytes and 2 per cent eosinophils; during an interval they numbered 6,500 and 4,300 with 28 per cent lymphocytes and 12 per cent monocytes. Plasmodia were not found. The sedimentation rate and blood protein determinations were normal. An electroencephalographic tracing was interpreted as normal.

The temperature registered at home for several weeks and under my observation for two weeks is illustrated in figure 5. Recurrences were not as regular as the patient had stated; the intervals varied from 3 to 9 days. Between Dec. 8, 1948 and Jan. 14, 1949 temperature measurements at home showed periodic attacks of fever 6, 5, 7, 7, 5 and 5 days apart.

Case 10.—(The record of this patient was placed at my disposal by Dr. Robert Loeb at Presbyterian Hospital, New York, who permitted me to publish an abstract of it. She was studied over thirty years in the medical wards on about twenty occasions, and she made many more interim visits to the outpatient department. To date she has had episodes almost without interruption for thirty-seven years. The diagnosis came to be regarded as "Tatosian's" disease after the patient's name.) Mrs. M. T. O., aged 40, at the age of 3 years had had pain in the abdomen, chills and fever, which occurred after she ingested a large meal and lasted a day. Thereafter similar attacks recurred at intervals of approximately two weeks. Her tonsils were removed without effect on the attacks.

She was first studied at the Presbyterian Hospital in 1918 at the age of 9 years, having had recurrent episodes for six years. An attack was characterized by chilliness, fever (up to 40 C., 104 F.) and pain in the abdomen; it lasted twenty-four to forty-eight hours and was succeeded by a period of good health which persisted until the next episode. Leukocytosis occurred during the episodes, with one count of 37,000. A physician suspected malaria. Her appendix was removed because of suspected chronic appendicitis at a different hospital without effect on the recurrences.

Although the episodes were said to have occurred at two week intervals, a three week hospital record in February 1921 listed three bouts of fever 5, 4 and 8 days apart. Reaction to a Wassermann test at this time was positive. Syphilis, miliary tuberculosis, Hodgkin's disease, lymphosarcoma and focal infection were considered as diagnoses. In April 1923, the cervical lymph nodes were swollen and the patient jerked and twitched in a manner suggestive of chorea or hysteria. A second tonsillectomy was performed, again without effect on the episodes. Soon afterward, both shoulders and one knee hurt during the febrile bouts and the leukocytes numbered 13,000 to 15,000. Reaction to another Wassermann test was negative. Because itching of the conjunctivas preceded some attacks and there was some swelling over the ankles, angioneurotic edema and a possible allergic basis were suspected. All of the usually applied skin tests for protein gave negative results. The episodes during that period of study came at six day intervals.

On different occasions during the following years the patient was given elimination diets, rice diets, wheat-free and milk-free diets, was kept in a room with filtered air and was denied cosmetics, all without effect, yet an impression persisted that some allergic disturbance was a fault. There was never eosinophilia; there were no other allergic manifestations and no history of allergy in her relatives. Temperature charts over several periods recorded in the hospital showed febrile episodes at intervals of 5, 4, 7, 8, 6 and 7 days in 1927; 3, 3, 2 and 3 days in 1930; 10, 20, 16, 4, 20 and 9 days in 1931, and 5, 4, 6 and 35 days in 1936. In spite of this record, episodes at home were said to recur about every two weeks, and oftener when she was "run down" or agitated. Occasionally they were spaced at exactly seven days. She was free from episodes for one three-month period and in several shorter ones.

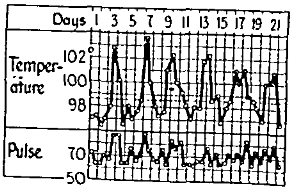

Fig. 4 (case 9).—Episodes at three and four day intervals in 1946.

Throughout the years of study, innumerable laboratory studies and roentgenograms were made and many consultations were held without fruitful results. During observation she had several severe infections of the respiratory tract and fractures: she was given quinine, arsenicals, sulfonamide drugs and other forms of therapy. In May 1942 cholecystectomy revealed a normal gallbladder with a few stones, but there were peritoneal adhesions and free peritoneal fluid suggested a chronic form of peritonitis. No episodes occurred during the last seven months of a normal pregnancy in 1945, and the patient stated that she "never felt better" in her life.

At the time of writing, 1949, episodes recur sometimes once every other month and sometimes twice a month. They are of two kinds, one with a chill, fever and abdominal pain, the other with arthralgia and temperature of 40 C. (104 F.).

CASE 11.—(The record of this patient was supplied by Dr. Marion M. Young of Pleasant Hill, Tenn.) A woman aged 68 had had episodes of fever, malaise and arthralgia for over twenty years. Malaria was suspected but never proved, and antimalarial therapy was of no avail. The episodes have recurred always at regular intervals, at first every twenty-eight days and now every fourteen days. Fever (to 39 C., 102 F.) lasts two or three days and is reduced by salicylate drugs. Laboratory data are not available.

CASE 12.—Mr. T. W., aged 54, was a patient of Dr. Myron Prinzmetal of Beverly Hills, Calif., who permitted me to use the data. The first febrile episodes occurred three or four times a year in 1941. They consisted of severe chills lasting an hour followed by temperature of 39.5 C. (103 F.), severe sweating and complete recovery after twelve or fifteen hours. During the next few years the episodes came at shorter intervals. Malaria was suspected, but Plasmodia were not found and quinine had no effect. All laboratory studies gave negative results, and physical examination disclosed no abnormalities. Intensive treatment with penicillin, sulfonamide drugs and streptomycin gave no relief.

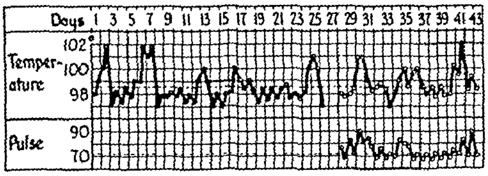

Fig. 5 (case 9).—Episodes at three to eight day intervals recorded at home until the twenty-sixth day, then in the hospital in 1948.

By 1946 the attacks increased in severity and the duration to thirty-six to seventy-two hours. Malaria was suspected again, but chlorguanide hydrochloride had no effect. At the time of writing attacks are said to be still more frequent, coming at approximately 7 to 10 day intervals. A tracing made from temperature registered by the patient Feb. 25 to April 5, 1948, shows intervals of 20, 14 and 9 days from the beginning of one episode to the start of the next. Sometimes the episodes begin without chills, but fever, headache and perspiration are constant and last five or six days, so that there are few days between attacks on which the patient feels well.

CASE 13.—P. K. (a patient of Dr. W. C. Mumler of Los Angeles) has had bouts of fever for five years. They have been characterized by pharyngeal injection, backache, headache, generalized muscular pains, fever (up to 39 C., 102 F.) and severe prostration lasting six or seven days; they have occurred regularly at intervals of six or eight weeks. The leukocytes have numbered from 8,000 to 10,000. The spleen has been palpable during each attack since 1946. All studies including those for malaria have revealed essentially normal conditions. In May 1947 an attack seemed to be terminated by penicillin therapy and there was no recurrence until May 1948.

CASE 14.—D. W., a man aged 28, was seen by Dr. Howard Alt of Chicago (who permitted the use of this record, and who will report the case with others in detail elsewhere). The patient had had episodes of chills and fever since the age of 10 months. They recurred during his childhood at six weeks to two month intervals and lasted three days to two weeks, requiring rest in bed. He was well between times. There were no other symptoms. For the past five years the attacks came every six months. An observed episode occurred at a hospital in February 1947. On admission the patient had shaking chills, a temperature of 41 C. (105 F.) and tachycardia (120). There were no other abnormal observations except a faint systolic murmur. Endocarditis or typhoid was suspected, but all laboratory studies gave normal results. The leukocytes numbered 7,000, and Plasmodia were not found. The patient had several more chills and temperature of 40 C. (104 F.), but he recovered the next day; however, he had one more chill and fever (39 C., 102 F.) on the fourth day.

CASE 15.—Brick [9] reported the case of a man aged 41 whose periodic episodes began twelve years ago in 1937, with an attack of fever, chills and myalgia. Between 1937 and 1943 episodes recurred three or four times a year. Since 1946 they have recurred every three to four weeks. They are characterized by the symptoms previously mentioned and by drenching perspiration, headache, anorexia, nausea (occasionally vomiting) and temperature of 40 to 40.5 C. (104 to 105 F.) lasting four to six days. He was studied sixteen times at one hospital, where many tests were made; sulfonamide compounds, antibiotics and transfusions of blood were given; tonsillectomy, exploratory laparotomy and appendectomy were performed, all without effect on the episodes.

In one episode observed by Brick, the temperature rose to 40.3 C. (104.6 F.) and the spleen became palpable. Results of all examinations were normal, except for leukopenia—3,000 cells with 28 per cent neutrophils. The number of eosinophils fell from 122 before to zero during the episode. Plasmodia were not observed and the patient was given a course of quinacrine hydrochloride without effect. The next episode began twenty-one days after the beginning of the one observed.

Although the following case is grouped with those of periodic fever, the patient had symptoms and signs different from the rest, characterized by involvement of the upper part of the respiratory tract, dermal eruptions, diarrhea, stiffness of the muscles, stupor and signs of disturbance of the central nervous system. The episodes caused severe illness.

CASE 16.—The case of a white boy aged 13 was submitted to the editor of *Arizona Medicine* [10] for analysis. The child had had about eighty attacks of severe illness since the age of 2 years. The episodes came every six to eight weeks in the winter and every two to four months in the summer, each lasting seven to ten days. The onset always began with symptoms of an acute infection of the respiratory tract; in infancy the episode was of that nature alone. Later fever (40 C., 104 F.), drowsiness or stupor, polydipsia, polyuria, an erythema-multiforme-like or urticarial rash, diarrhea, enlarged cervical lymph nodes, pneumonia and muscular stiffness recurred in varying combinations. The boy has been well between times. His mother and two cousins have allergic disorders.

During one observed episode which lasted eleven days, the temperature reached 40 C. (104 F.), the pharynx was inflamed, cervical adenopathy was present, the boy was somnolent and an urticaria-like eruption appeared on the extremities. Pathologic great toe reflex and Kernig's sign were present bilaterally. There were rales and blood-streaked sputum. The spleen was felt once. There were no abnormalities of the cranial nerves. The patient recovered abruptly from the attack. The next episode began forty-one days after the start of the one described. The leukocytes numbered 18,600. The stools were passed involuntarily and sometimes contained blood. Blood cultures were sterile; agglutination tests, roentgenograms of the chest and the spinal fluid examination gave normal results. During the next four months only one attack occurred, which was said to have been aborted by an injection of plasma and isotonic solution of sodium chloride.

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[9] Brick, I. B.: Periodic Disease: A Case of Intermittent Fever, Splenomegaly and Leukopenia of Eleven Years' Duration, Bull. Georgetown Univ. M. Center (April-May) 1949.

[10] Arizona Medical Problems: Consultation and Case Analysis, Case no. 5, Arizona Med. 5: 81-85 (Jan.) 1948.

Studies at another hospital in 1948, when the patient was 16 years of age, were unrevealing except for an electroencephalogram which was interpreted as consistent with an epileptic disease. The diagnosis was recorded as "Friedreich's ataxia (?), retinitis pigmentosa." Periodic angioneurotic edema affecting the central nervous system may be a better suggestion.

PERIODIC (CYCLIC) NEUTROPENIA

In the previous paper,[1] case 4 was described together with 3 cases of periodic (cyclic) neutropenia reported in the literature. Since then the records of 12 other cases, most of them reported after 1946, have been gathered and described elsewhere.[8] Certain features of cases in this group are of interest, especially the remarkable regularity of the three week interval and the similarity of signs and symptoms in all 16 cases. In 1 instance there were recurrences for thirty-four years. In another, episodes were grouped over three periods only. Arthralgia was noted in 3 instances and abdominal pain in 1. Genetic relationship was evident in 1 case. Concurrent thrombopenia and purpura were observed in another. Eosinophilia was reported in 3. Splenectomy caused lessening of or relief from symptoms in 4 patients, but periods of neutropenia of lesser degree persisted. Splenectomy gave no relief in 2 cases.

PERIODIC (INTERMITTENT) ARTHRALGIA

CASE 17.—(This record was furnished by Dr. Joseph Stokes Jr.). M. E. P., a woman aged 54, had pain in her right knee at the age of 17 after a bruise, but roentgenography and removal of a piece of cartilage were without effect. Since then pain, heat and swelling have recurred in both knees, chiefly in the right one, at twelve to thirteen day intervals for thirty-seven years. At the age of 35 stiffness was noted at times simultaneously in her fingers and elbows, similar to the circumstances in case 5. In 1919, 1928 and 1940 attacks ceased for about six months. There was no relation of the episodes to the menstrual cycle, and they persisted after hysterectomy was performed in 1940.

Dr. Marian W. Ropes of Boston informed me of 5 of her patients. One had hydroarthrosis in both knees at six day intervals. In the second both knees were affected at twelve and sixteen day intervals for seven years. In the third, one knee was involved every ten days, in another an elbow was swollen every ten days; and in the fifth case, one knee was affected regularly every twenty-eight days.

In a query[11] sent to the editor of a medical journal, diagnostic aid was sought for a woman aged 26 who had low grade fever, stiffness, discomfort and swelling of the fingers, hands and arms and general malaise regularly "every few weeks" for three years. The leukocytes during an episode numbered 9,000 with 8 per cent eosinophils. All other studies were negative. From the paucity of data available, the patient may have had either periodic arthralgia with fever, which is unusual, or periodic fever with arthralgia.

PERIODIC ABDOMINALGIA (BENIGN PAROXYSMAL PERITONITIS)

Cases 1, 2, 3 and 10, which are grouped as periodic fever, also involved abdominal pain and may be included also under the heading of periodic abdominalgia (benign paroxysmal peritonitis). Because there was no evidence of actual peritonitis in these cases or in case 19, they as well as some reported by Siegal[12] and others here may be designated more appropriately by the broader term periodic abdominalgia; visceralgia may be a better name, because pain in the chest, extremities and elsewhere is a usual accompaniment. Heberden[12a] refers to "pains which are regularly intermittent, the fits of which return as periodically as those of an ague; such I have known in the bowels, stomach, breast, loins, arms and hips, though it be but seldom that these parts suffer in this manner." Laparotomy in 3 of Siegal's patients during attacks revealed widespread edema of the peritoneum in one, moderate vascular injection in another and congestion of the entire abdominal contents of a third. These changes would seem to be compatible with a vasomotor disturbance similar to that causing urticaria or angioneurotic edema.

CASE 18.—H. C., a Jewish salesman aged 29, was referred for study by Dr. T. H. Mendell. The patient had his first attack of chills, perspiration, fever, leukocytosis and pain in the right lower part of the abdomen in 1944. Thereafter attacks came at irregular intervals with good health between. Episodes as recorded by the patient came at 34, 14, 36, 40, 59, 24 and 14 day intervals. Some attacks did not interfere with his work; others have required rest in bed. He was studied in numerous hospitals, on one occasion in 1946 for a bleeding duodenal ulcer. Innumerable laboratory and other tests, save for leukocytosis, revealed normal conditions. Malaria was suspected, but Plasmodia never were found. Penicillin and streptomycin therapy were ineffective.

Study of the patient during an episode revealed fever (38.5 C., 101 F.), pulse rate of 98, tenderness in the right lower quadrant of the abdomen with moderate rigidity of the right rectus muscle. The patient walked bent to the right. The leukocytes numbered 21,000, with 85 per cent polymorphonuclear cells and 2 per cent eosinophils. The sedimentation rate by the Cutler method was 15 mm. in sixty minutes. Recovery was prompt.

CASE 19.—S. C., a Jewish student aged 20, at the age of 5 years had had a severe sore throat followed by swelling of his extremities thought to be angioneurotic edema from allergy. Similar edema recurred at the age of 6 years after a gastrointestinal disturbance. At the age of 11 years, attacks of "upset stomach" and severe abdominal pain began to recur once a month, gradually increasing in frequency to once every thirteen to fifteen days. Two or three days before an episode there is erythema of the arms and chest which persists during the incident. Edema of the feet and aching immediately precede nausea, vomiting, diarrhea and severe pain either in the right lower quadrant of the abdomen or in the epigastrium. There is no fever, leukocytosis or eosinophilia. The episodes last three to four days. The patient was given a strict elimination diet for six weeks, but episodes recurred as usual. In some episodes external evidence of angioneurotic edema predominates, in others it is minimal and abdominal distress is dominant. During one of the severe abdominal attacks, a roentgenogram made after ingestion of a barium meal by the patient showed an "irritative" pattern of the small intestine with mucosal edema, segmentation and hypermotility. There was no diarrhea. Evidence points to a vasomotor disturbance, not peritonitis, as a cause.

Dr. Robert Loeb called my attention to several similar patients studied in his service and permitted the following abstracts to be made.

CASE 20.—Mr. G. H., aged 19, has had weekly attacks of fever (40 C., 104 F.) and abdominal pain since the age of 3.

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[11] Polyarthritis, Queries and Minor Notes, J. A. M. A. **139:** 192 (Jan. 15) 1948.

[12] (*a*) Siegal, S.: Benign Paroxysmal Peritonitis, Ann. Int. Med. **23:** 1-21 (July) 1945; (*b*) Benign Paroxysmal Peritonitis: Second Series, Gastroenterology **12:** 234-247 (Feb.) 1949.

[12a] Heberden, W.: Commentaries on History and Care of Diseases, London, Ch. 29, p. 151, 1806.

In January 1947 he had generalized urticaria, but all allergic tests gave negative results. Appendectomy gave no relief.

CASE 21.—Mr. M. G., aged 55, had attacks of fever and abdominal pain lasting a day every two to three months for twenty-seven years. Pain often began in the shoulders or hips and spread to the abdomen.

CASE 22.—Mr. M. K., a Jewish salesman aged 34, had pain in the right side of his chest and abdomen and fever lasting a day or two for seventeen years. At first the episodes occurred every three weeks, at present every ten days. Appendectomy gave no relief. The leukocytes were sometimes normal in number and at other times increased to 15,000 during the bouts. Periodic abdominal pain and fever occur in three of his brothers.

PERIODIC PARALYSIS

The syndrome of periodic paralysis, because of its striking characteristics, was one of the first periodic conditions to be studied. In many reports cited in Talbot's review,[13] one as early as 1687, attacks came at weekly intervals for years. Many instances of multiple cases in families are recorded. An association of the episodes of paralysis with change in the distribution of potassium often occurs, but whether the change is a cause or an effect is unknown. However, in most cases no mention is made of angioneurotic phenomena, fever, pains or changes in the leukocyte count characteristic of other periodic disorders.

PERIODIC (ANAPHYLACTOID) PURPURA AND PERIODIC (ANGIONEUROTIC) EDEMA

It is probable that certain cases of so-called anaphylactoid purpura (Schönlein-Henoch syndrome) and angioneurotic edema belong to the group of periodic disorders under discussion. The patient and his brother with fever and abdominal pain described by Alt and Barker[14] were subsequently regarded as having Henoch's purpura by Althausen, Deamer and Kerr.[15] In cases 10, 16, 19 and 20 of this report, urticaria and/or angioneurotic edema were prominent features. Except for the absence of purpura, case 10 could be regarded as typical of Schönlein-Henoch's syndrome and case 19 of Henoch's syndrome. Anaphylactoid purpura according to most textbook descriptions is said to be recurrent, but little attention was given to determining any regularity of cycles. In Osler's[16] series of cases, several patients were reported as having episodes at intervals of a week to a month for many years; in 1 for fifty-four years. According to Wintrobe,[17] episodes of several days' duration occur with intervals of eight days or more, and Minot[18] has stated that recurrences come at one to six week intervals. Many authors suspect that allergy plays a role, and in a few cases removal of an offending protein from the diet of the patient stopped recurrences. However, it is generally admitted that the cause is unknown.

In Osler's[19] report of hereditary angioneurotic edema in five generations of a family, several members were recorded as having recurrent attacks at regular intervals for many years. In a man aged 92, episodes had recurred at intervals of a month or six weeks for seventy-four years. Osler cited reports of other authors in which "there was a remarkable regularity in the sequence of attacks which recurred on the seventh, fourteenth or twelfth days." Whitfield[19a] described the case of a woman, aged 39, who had edema of the ankles for a few days about twelve times a year for twenty-two years. There is little doubt, therefore, that certain cases of both anaphylactic purpura and angioneurotic edema, which Osler regarded as related conditions, can be included among the periodic diseases.

COMMENT

The disorders grouped as periodic disease can be placed into more than the four categories first suggested.[1] In addition to periodic fever, periodic abdominalgia, periodic neutropenia and periodic arthralgia, it is likely that the cyclic thrombopenia of Demmer,[20] certain forms of so-called anaphylactoid purpura, angioneurotic edema and familial periodic paralysis belong to the group. Perhaps others such as Behcet's syndrome[21] also may be included. From the descriptions given, it seems that certain instances of Kahlmeter's allergic rheumatism,[22] Solis-Cohen's[23] angioneural arthroses and Hench's[24] palindromic rheumatism represent cases of periodic arthralgia, an opinion shared by Weber.[25] A query[26] to the editor of a medical journal describes periodic pain in the extremities affecting sixteen members in five generations of a family. The trouble starts in infancy and continues throughout life. Pain in the extremities lasts one or two days and recurs at intervals of a few days to a few weeks. These and the conditions described herein may be unrelated entities, but they are more likely to be different manifestations of the same cyclic underlying cause. If so, for the sake of simplicity, it would seem preferable to name them with the adjective "periodic" before each descriptive term and to group them as follows:

Periodic Disease

Periodic fever
Periodic abdominalgia
Periodic arthralgia
Periodic neutropenia
Periodic purpura
Periodic thrombopenia
Periodic edema or urticaria
Periodic paralysis (?)

A unity is suggested by the similar duration of the cycles in each and by overlapping symptoms and signs. For example, the differentiation of periodic fever with abdominal pain from periodic abdominalgia with fever is an arbitrary one. Leukopenia or arthralgia are present in several cases of periodic fever. In many instances of periodic abdominalgia there is arthralgia, and in periodic neutropenia there is at times arthralgia.

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[13] Talbot, J. H.: Periodic Paralysis: A Clinical Syndrome, Medicine **20:** 85-143, 1941.

[14] Alt, H. L., and Barker, M. H.: Fever of Unknown Origin, J. A. M. A. **94:** 1457-1461 (May 10) 1930.

[15] Althausen, T. L.; Deamer, N. C., and Kerr, W. J.: The False "Acute Abdomen": II. Henoch's Purpura and Abdominal Allergy, Ann. Surg. **106:** 242-251, 1937.

[16] Osler, W.: The Visceral Lesions of Purpura and Allied Conditions, Brit. M. J. **1:** 517-525 (March 7) 1914.

[17] Wintrobe, M. M.: Clinical Hematology, Philadelphia, Lea & Febiger, 1942, p. 577.

[18] Minot, G., in Cecil, R. L.: Textbook of Medicine, Philadelphia, W. B. Saunders & Company, ed. 7, p. 1100.

[19] Osler, W.: Hereditary Angio-Neurotic Edema, Am. J. M. Sc. **95:** 362-367, 1888.

[19a] Whitfield, A. G. W., and Armott, W. M.: Chronic and Unexplained Oedema, Lancet, **2:** 225-228 (Aug. 6) 1949.

[20] Demmer, T.: Morbus Maculosis Werlhofii in Regelmässigen vierwochentlichen Schuben bei einem 60-jährigen Mann nebst Untersuchungen über Blutplättchen, Folia haemat. **26:** 74-86, 1920-1921.

[21] Katzenellenbogen, I.: Recurrent Aphthous Ulceration of Oral Mucous Membrane and Genitals Associated with Recurrent Hypopyon and Iritis (Behcet's Syndrome): Report of Three Cases, Brit. J. Dermat. & Syph. **58:** 161-172, 1946.

[22] Kahlmeter, G. Y.: A-t-il des formes de rheumatisme et périarticulaire d'une nature reellement allergique? Acta. med. Scandinav. **102:** 432-443, 1939.

[23] Solis-Cohen, S.: On Some Angioneural Arthroses (Periarthroses, Parathroses) Commonly Mistaken for Gout or Rheumatism, Am. J. M. Sc. **147:** 228-243 (Feb.) 1914.

[24] Hench, P. S., Palindromic Rheumatism, Arch. Int. Med. **73:**

[25] Weber, F. P.: Lancet **2:** 931-932 (Dec. 29) 1946.

[26] Familial Periodic Pain, Queries and Minor Notes, J. A. M. A. **139:** 1123 (April 16) 1949.

abdominal pain or fever. Urticaria and angioneurotic edema occur in conditions called periodic fever, abdominalgia ar intermittent arthrosis [26a]; but these manifestations also are characteristic of the Schönlein-Henoch syndrome in which there occur abdominal pain and/or arthralgia, with or without purpura. Except for periodicity, in periodic paralysis there are apparently none of the features of the other diseases.

Most striking are the regular predictable recurrences of the episodes with uniform characteristics for years, in 2 instances (cases 10 and 17) for thirty-seven years and in Osler's case seventy-four years, usually without otherwise affecting the general health. Of particular interest is the regular rhythm of about three weeks in all 16 cases of periodic neutropenia. In most instances the episodes persist, when once established.

Of the 53 cases of periodic disease described or cited here and previously, 36 were in males and 17 in females. Except in periodic paralysis, most victims are ambulatory during their episodes; however, in 2 patients (cases 7 and 16) the attacks were severe, and death from an unknown cause occurred during one episode (case 7). Death occurs occasionally from edema of the glottis in periodic edema, from infection in periodic neutropenia and from several causes in periodic purpura.

The onset of periodic illness of so many persons in infancy suggests a congenital basis. Heredity is shown in instances in which similar disturbances existed in siblings (Siegal,[12] Alt and Barker [14] and case 22) and in parents.[27] Osler and others record many familial groups with purpura and edema, and heredity is obvious in many cases of periodic paralysis. The manifestations may not become clinically apparent until late in life. Siegal [12b] has pointed out that all his patients with abdominalgia were either Jewish or Armenian. Three of the 5 patients with abdominalgia reported herein were Jewish, but no such ethnic predominance occurs in the other periodic diseases.

CAUSE OF PERIODIC DISEASE

The cause of periodic disease is unknown, but several theories have been proposed involving infections, allergy, endocrinologic or nervous influences, or some connection with known or unknown intrinsic or extrinsic cycles.

Infections.—It would be most unlikely for any known infection to cause regularly recurrent relapses of similar intensity and character for many years without some pathognomonic evidence, or recovery or deterioration and death of the victim. In all instances of periodic fever, infection was sought and empiric treatment was without avail. Rheumatic fever, tuberculosis and brucellosis often were considered, but in most instances malaria was suspected. In no case have Plasmodia been found, and antimalarial treatment has had no influence on the episodes. Surgical operations performed to remove supposed sources of infection have never given relief.

In this connection the observations of Putnam, Boyd and Mead [28] are of interest. They have reported cycles of parasitemia regularly recurrent at twelve to sixteen day intervals in several patients in the late stage of malaria due to Plasmodium vivax. The recurrences were believed to be attributable either to unknown aspects of the parasitic cycle or to intermittent activity of the host's mechanism of defense. Male patients with chronic malaria as observed by Gross [6] had recurrences at regular three to four week intervals, which led him to suspect the influence of some inapparent menstrual-like cycle, as discussed in a later paragraph.

Allergy.—Features characteristic of allergic disturbance are present in many of the patients described or in their genetic relatives. Furthermore, in the patients of Cooke [4] and Rowe [5] and in others with anaphylactoid purpura, episodes ceased after an offending food protein was deleted. Yet in spite of repeated attempts in some cases reported here and elsewhere,[12] tests for specific hypersensitivity to proteins were unrevealing and severely restricted diets failed to alter the periodic symptoms. It is still possible, of course, that some undisclosed specific hypersensitivity to unknown agents accounts for periodic disease, but, as in the case of infections, it is difficult to believe that such hypersensitivity could cause clinical episodes so uniform and so regularly recurrent for decades. Furthermore, causes other than hypersensitivity to protein provoke urticaria, angioneurotic edema, eosinophilia or other evidence of vasomotor dysfunction. Except perhaps for periodic neutropenia, a vasomotor disturbance could indeed account for most of the signs or symptoms in the various forms of periodic disease. But even if it did, the reason for its regular recurrence still would be a mystery.

Endocrinologic Disturbance.—The regular rhythmic recurrence of the menstrual cycle suggested to some observers its association with some of the periodic disorders in question, as discussed previously.[1] It was suggested that perhaps a similar undetected cycle was present in men to account for some periodic conditions in that sex. Studies by others,[29] however, showed a constant excretion of androgenic and gonadotropic substances in a number of normal men with no hint of rhythm. In many instances the onset of the disorders began in infancy when sexual hormonal cycles are unlikely to occur. In no cases in women were the disorders synchronous with menstruation; they may begin after the menopause or in men over 60 years of age.

In cases 4, 7 and 8 no abnormalities were detected in the excretion of estrogens, gonadotropins or 17-ketosteroids, and the administration of diethylstilbestrol or testosterone had no influence on the episodes in cases 1, 2 and 7. In case 8 the episodes as recorded were less severe after therapy with testosterone propionate, but the change may have been coincidental. Fluctuations in the excretion of 17-ketosteroids in synchrony with cyclic neutropenia was noted in 1 instance [30] and large amounts of gonadotropins were excreted in another,[31] but similar changes were not detected in case 4. In none of my patients was there clinical evidence of any endocrine disturbance.

[26a] Kahlmeter.[22] Solis-Cohn.[23] Weber.[25] Berger, H.: Intermittent Hydrarthrosis with an Allergic Basis, J. A. M. A. **112**: 2402-2405, 1939.

[27] Siegel.[12] Wolf, S., and Wolff, H. G.: Intermittent Fever of Unknown Origin: Recurrent Fever with Benign Outcome in a Patient with Migraine and Notes on Neurogenic Fever, Arch. Int. Med. **70**: 293-302 (Aug.) 1942. Vahlquist, B.: Cyclic Agranulocytosis: Report of a Case with Short Survey of the Disease, Acta. med. Scandinav. (supp.) **170**: 531-542, 1946.

[28] Putnam, P.; Boyd, M. F., and Mead, P. A.: Periodic or Cyclically Recurring Phenomena of Vivax-Malaria Infection, Am. J. Hyg. **46**: 212-214, 1947.

[29] Pederson-Bjergaard, K., and Tønnesen, M.: Sex Hormone Analysis Acta. med. Scandinav. (supp. 213) **131**: 284-297, 1948.

[30] Reznikoff, P.: Cyclic Neutropenia: A Case Study with Bone Marrow Findings Before and After Splenectomy, Tr. A. Am. Physicians **59**: 276-281, 1946.

[31] Rolland, C. F.: Personal communication to the author.

Ask-Upmark[32] presented 2 cases of hyperparathyroidism with recurrent fever, 1 with episodes at seven day intervals which were abolished by excision of the glands. In 1 patient with hyperparathyroidism studied at this hospital over a three month period, three episodes of low grade fever appear on the temperature chart at intervals of 21, 36 and 25 days. Studies pertinent in this respect were reported by Richter and his associates.[33] Regular periods of activity were caused *in rats after the endocrine system was disturbed by the* removal of various endocrine glands. Extirpation of one gland supposedly released a cycle caused by another, thus upsetting a pattern and establishing a rhythm not evident in the normally functioning animal. For examples, a thirty-four day cycle was observed in a parathyroidectomized monkey and in a patient with hypoparathyroidism; a fourteen day cycle appeared after the pituitary stalk was divided in rats and a twenty-five to thirty-five day cycle after thyroidectomy. Whether or not these observations have any bearing on the problem cannot be decided at present.

Migraine and Epilepsy.—A possible relation of periodic disorders to migraine was suspected in a patient of Wolf and Wolff.[27] Under the heading abdominal epilepsy, Moore[7] has reported relief in 3 patients by the administration of diphenylhydantoin sodium and phenobarbital. One was a woman aged 50 in whom seizures of abdominal pain recurred every other day. The second patient, a boy 12 years of age, had abdominal pain every ten days. He also had hay fever and asthma. The third patient, aged 32, had recurrent abdominal pain since the age of 9 months with episodes every seven to eight days. Urticaria was present. The encephalograms of all 3 patients showed slight abnormalities. An abnormal electroencephalogram was also obtained in case 16. The matter is further complicated by evidence suggestive of both epilepsy and allergic disturbances in case 16 and in the patients of Moore just mentioned. Electroencephalograms made in cases 1, 2 and 9 showed no abnormalities, and therapy with diphenylhydantoin sodium failed to alter the episodes in case 1. No evidence of epilepsy or migraine was detected in any of my patients.

Biologic Rhythm.—Attention was drawn[1] previously to the curious fact that in many instances of periodic disease, including some of those described by Osler[10] and Ask-Upmark,[32] the duration of the cycles was approximately seven or multiples of seven days. Allusion was made to a possible association with the seven day week as established in ancient times on an astrologic or religious basis, or possibly on the basis of a natural rhythm of human life.[33a] It was called the "biological week" by Ask-Upmark.[34] A rhythm may be characteristic of mankind in general but inapparent except for its manifestations in extreme form in persons with periodic disease, in which the cycles cause disturbances great enough to attract attention. An alternate explanation[35] proposes that the human race has accustomed itself to the rhythm of the arbitrarily apportioned week and reacts in synchrony with it, which still leaves unanswered the question why the week was made of seven days in the first place. Against these views is the irregularity of episodes at times. In some victims the rhythm established early in life remains constant and predictable for decades; in others the episodes were widely spaced at first and shortened gradually, and in two instances (cases 9 and 14) the episodes began in short cycles and gradually lengthened. Many observers, notably Huntington[36] and Toynbee,[37] regard the whole history of life as a record of cycles. Hersey[38] in discussing periodicity of mood and ability stated the belief that rhythm is a fundamental law of nature. For the present, speculation as to the cause of periodic disease may well rest here.

SUMMARY

Over 50 cases of periodic disease, including periodic fever, periodic abdominalgia, periodic neutropenia, periodic arthralgia and periodic thrombopenia have been collected. They, together with many other recorded cases of periodic arthralgia (intermittent hydrarthrosis), periodic purpura (Schönlein-Henoch syndrome), periodic (angioneurotic) edema, and periodic paralysis are tentatively grouped as periodic disease and probably have a common cause. A hereditary aspect is apparent in many instances. A vasomotor disturbance seems to be the most obvious cause of the various clinical phenomena, but the reason for its regular rhythm is unknown. Theories as to the influence of infections, allergy, endocrinologic or epileptic factors are inadequate. Until further knowledge is attained, it is simplest to regard periodic disease as a manifestation of a rhythm of life.

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ABSTRACT OF DISCUSSION

Dr. Wesley W. Spink, Minneapolis: It is appropriate at this time for Dr. Reimann to emphasize that all that is febrile is not infectious. Since potent antibacterial agents are available for the treatment of infectious disease, there is constant temptation to administer one of these drugs to the patient with fever of unknown causation. Many physicians have seen patients with prolonged fever who were given the sulfonamide drugs and one or more antibiotics but who were found to have leukemia, lymphoblastoma, carcinoma or even thyrotoxicosis. A few simple laboratory tests often will demonstrate that a febrile patient is suffering from one of these diseases. Attention should be called to another feature of the constant use of chemotherapy: Patients with sepsis of known cause, as staphylococcic sepsis with bacteremia, may be treated successfully with penicillin and later, after an interval of weeks or months, will have low grade fever. One should always consider the possibility of a walled-off abscess which does not present localizing symptoms. I have observed this sequence of events with staphylococcic sepsis. And, finally, I should like to say one or two words about fever being due to chronic brucellosis. This problem has interested the group with which I am associated for a dozen years, and we have investigated several hundred patients. It is the unusual patient with active brucellosis who does not have fever. The physician often will say, "the patient is not febrile," but if one takes the temperature every four hours, one will find in the proved case that there is fever. This is not new. Hughes, in his monograph on "Mediterranean Fever," published in the last century, made the statement, after studying several hundred cases of melitensis infection on the Island of Malta, "If fever is not present, active disease is absent." Too often, the diagnosis of chronic brucellosis is made on the basis of an ill-defined illness and a positive skin reaction. We do not use the skin test in our clinic.

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[32] Ask-Upmark, E.: On Periodic Fever, Acta. med. Scandinav., 1938, pp. 1-93.

[33] Richter, C. P.; Honeyman, W. M., and Hunter, H.: Behavior and Mood Cycles Apparently Related to Parathyroid Deficiency, J. Neurol. & Psych. 3: 19-25, 1940.

[33a] Petersen, W. F.: Man, Weather, and Sun, C. C. Thomas Co., Springfield, 1947.

[34] Ask-Upmark, E.: Den Kvinnliga Genitalcykeln och några Invärtesmedicinska Sjukdomstillstånd, Svenska läk.-sällsk. förhandl. 9: 1-11, 1945.

[35] Kleitman, N.: Personal communication to the author.

[36] Huntington, E.: Mainsprings of Civilization, New York, John Wiley & Sons, Inc., 1945, p. 484.

[37] Toynbee, A. J.: The Study of History, New York, Oxford University Press, 1948.

[38] Hersey, R.: Emotional Cycles of Man, J. Ment. Sc. 77: 151-160, 1931.

Dr. Harold Jeghers, Washington, D. C.: Cases of unexplained fever, prolonged or of irregular duration, are a common problem in almost every hospital. They are frequently difficult to diagnose, often unsatisfactory as to treatment, and represent a great expense to the patient in the numerous studies that have to be made. We have been impressed with how frequently such instances are considered as synonymous with infection and so treated. There are literally several dozen conditions which can produce fever but which are not infectious in origin, and if the diagnostic studies are pointed entirely in the direction of an infection, many treatable or curable conditions can be overlooked. For example, fever occurs with severe pernicious anemia, lymphomas and other blood dyscrasias, many removable neoplasms, and many other systemic diseases. Dr. Reimann has provided a great service in emphasizing today that there are a number of important causes of elevated temperature that are overlooked. He has brought out in particular two or three varieties that are certainly not commonly recognized. In the past several months at Georgetown University Hospital, studies have been made of a male patient aged 46 who had had periodic fever for eleven years. The attacks would recur at intervals of a month up to occasionally as long as three months. A typical attack would consist of onset with chill and temperature of 103 to 105 F. sustained over a three to five day period and associated with leukopenia. Some eosinophil counts were made which disclosed a drop from 150 to 180 per cubic millimeters of blood to zero during the attack. The man had demonstrable pathologic conditions, particularly palpable splenomegaly, which receded when the attack was over. Numerous studies were made before, during and after one of those episodes, without a conclusion concerning the etiologic agent. It has been impossible to influence these attacks in any way. Over a period of many years, this person has been studied for disease in the abdomen. He has had numerous forms of therapy, including some of the newer antibiotics such as aureomycin. Apparently there is a periodic condition of this nature, the cause of which is still unknown. Apparently, it is not infectious. I am sure that this paper by Dr. Reimann will bring many of these cases to light. A second patient recently has been brought to my attention, a man aged 24 who has not yet been studied in the hospital. His story is that of recurrent ulcers in the mouth, periodic abdominal pain and a mild fever which has occurred with "the regularity of a menstrual cycle" (as he put it) once a month for the last five years. If they are looked for, I am certain that many more of these cases of periodic fever will be found.

Mona Lisa.—Leonardo Da Vinci (1451-1519), sculptor, artist, architect, scientist, poet and musician, was the illegitimate son of a notary. He, too, realized the importance of studying the cadaver, for it is recorded that he dissected over 30 bodies of old and young people by candle-light in the mortuary of Santo Spirito in Rome. To him perhaps we owe the aphorism "we are as old as our arteries," for he relates how he dissected the blood vessels of an old man of 100 and then those of a child of 2, comparing and portraying them. He held that every motion was expressed by every fiber of the body and therefore every muscle should be known by the artist. The best example of this dictumis, of course, is his picture of Mona Lisa, which is said to depict the exquisite play of 36 muscles of the face. Therefore, should any of you feel interest, it would well repay you to visit Windsor Castle, where a great number of his drawings of the human frame were bought and brought by William Harvey at the bequest of our King Charles I.—V. B. Green-Armytage, M.D., The Debt of the Fine Arts to Medicine, *Cambridge University Medical Society Magazine*, Easter term, 1949, Reprinted from "The Embryo," Summer, 1947.

TREATMENT OF SHIGELLA ENTERITIS WITH ORAL STREPTOMYCIN

A Report of Thirty-Four Cases

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Several preliminary reports have appeared in the literature indicating that shigellosis responds favorably to treatment with streptomycin. The National Research Council Committee[1] reported 2 cases of Shigella-caused dysentery in which a daily dosage of 1.5 Gm. of streptomycin was given intramuscularly for five days. In both cases, the stool cultures promptly became negative and an uneventful recovery ensued. Pulaski and Amspacher[2] treated 10 patients who had bacillary dysentery due to Shigella with streptomycin in doses of 1 to 4 Gm. daily for periods ranging from one to twelve days. The drug was administered orally in 2 cases, parenterally in 6 and in combination in 2. These investigators reported good to excellent results in nearly every case, with no instances of relapse during a one to four month follow-up period.

In view of the toxic reactions observed in connection with parenterally administered streptomycin, it was considered worth while in a series of cases of enteritis caused by Shigella organisms to use orally administered streptomycin exclusively. Toward this end, a diarrhea ward was set up at Children's Hospital in the summer of 1947, and all patients admitted to the hospital with the complaint of diarrhea were admitted directly to this ward. Three consecutive daily stool cultures were obtained on all patients, and, in those cases in which the Shigella organism was isolated, oral streptomycin therapy was started without delay. Thus, during 1947 and 1948, in 34 cases of Shigella enteritis, infants and children ranging in age from 3 months to 12 years were treated with orally administered streptomycin. For purposes of comparison, 20 additional patients with bacillary dysentery were treated with sulfadiazine, while 16 were managed with aerosporin (polymyxin B).

METHODS AND MATERIALS

Of the 34 patients, 25 were admitted in the acute phase of the disease, while 9 were carriers. At least two positive cultures were obtained in each case prior to the institution of therapy. During treatment, stool cultures were obtained daily until the patients were discharged from the hospital. The mediums used included Salmonella-Shigella (SS) agar, desoxycholate citrate agar and tetrathionate broth. The rectal swab technic was routinely employed, and all stools were seeded simultaneously on these three mediums. Over four hundred stool cultures were obtained in this series (an average of twelve per patient). It may be well to

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Miss Sara Stevens and Mrs. Susan Gougé gave technical assistance.

From the Research Foundation of Children's Hospital, Washington, D. C. and the pediatric services of the Georgetown and George Washington University Schools of Medicine.

This study was supported by a grant from the Antibiotic Study Section of the Division of Research Grants and Fellowships, The National Institutes of Health, United States Public Health Service.

1. Streptomycin in Treatment of Infections: *Report of One Thousand Cases*, National Research Council, Committee on Therapeutics and Other Agents, J. A. M. A. **132:** 4 (Sept. 7); 70 (Sept. 14) 1946.

2. Pulaski, E. J., and Amspacher, W. H.: Streptomycin Therapy for Certain Infections of Intestinal Origin, New England J. Med. **237:** 419, 1947.

point out that the Salmonella-Shigella agar proved to be the most sensitive medium in the isolation of shigellae, while Kauffman's tetrathionate broth was the least useful. On the other hand, for the isolation of salmonellae from stools, tetrathionate broth is considerably more effective in our experience than either the Salmonella-Shigella agar or the desoxycholate citrate agar.[3]

It should be emphasized that with the use of these three mediums in combination the chances of detecting growth of either shigellae or salmonellae on stool cultures are extremely good. In this series, 15 infectious cases were identified as caused by organisms of the Flexner group, while the other 19 were caused by the Sonne type of bacilli.

DOSAGE AND DURATION OF THERAPY

Arbitrarily, during the initial phase of this study, 100 to 200 mg. of streptomycin were administered orally every four hours. However, it was soon found that larger doses were required to sterilize the bowel of its pathogenic organisms in the active cases. We subsequently decided that 400 mg. every four hours (2.4 Gm. per day) was a more efficacious dose. This latter dosage was used both in the active cases and in the carrier group. It is our impression that perhaps a smaller dose (200 mg. every four hours) might be sufficient to clear up infections in the carrier group adequately; however, in acute cases the larger dose of 400 mg. every four hours seems to be required, in view of the more precipitous passage of stool flux through the intestinal tract during the acute phase. No intramuscularly administered streptomycin was used in this series.

The duration of treatment with orally administered streptomycin ranged from 7 to 19 days with an average of 10.7 days per patient. The total dose varied from 8.4 to 57.6 Gm., the average being 24.4 Gm. per patient. The drug was well tolerated, and toxic reactions were not observed. All the patients, including the infant age group, accepted the orally administered streptomycin well.[4]

RESULTS

In all 34 patients in this series, rapid disappearance of the Shigella organism from the stool occurred shortly after therapy was started. Daily stool cultures made during the course of therapy permitted observation of the fact that disappearance of the Shigella organism occurred from one to four days after the start of treatment. The Sonne strains appeared to respond as promptly as the Flexner organisms.

In the 25 cases of acute shigellosis the number of positive stool cultures obtained after starting streptomycin treatment ranged from zero to four, with an average of 1.6 per patient. On the other hand, in the carrier group, none of the 9 patients showed positive stool cultures within twenty-four hours after institution of therapy. An average of ten negative stool cultures were obtained in each case before the patient was considered cured. Once the stool became negative, no cultural reversals were noted during the hospital stay.

In 5 of the acute cases, however, a recurrence of positive stool cultures was noted within one month after discharge of the patient from the hospital. This may have represented either a relapse or a reinfection. This latter possibility must be considered in view of the fact that many of the families, including the siblings and parents, were similarly infected with shigellosis. It was sometimes difficult to persuade the remaining members of these families to submit to treatment in spite of a demonstrable pathogen in the stool. Such was the case in the families of 4 of the 5 patients whose stool cultures showed a recurrence of Shigella organisms.

Clinically the improvement was commensurate with the salutary effect observed bacteriologically. In the acute cases a high elevation of temperature, pronounced drowsiness and frequent watery stools (many of which showed associated blood and mucus) were often noted at the time of admission. Within twelve to twenty-four hours after therapy was started the patients usually manifested considerable clinical improvement characterized by a rapid decrease of temperature, prompt reduction in the number of stools (usually within one to three days) and disappearance of blood and mucus from the feces. In only a few cases, particularly among the infant group, was extensive adjuvant fluid therapy required, because the diarrhea was checked rapidly with streptomycin. An uneventful recovery occurred in all 34 cases, except for the previously noted cultural reversal in 5 instances.

COMPARISON OF STREPTOMYCIN, SULFADIAZINE AND AEROSPORIN THERAPY

In view of the high degree of bactericidal specificity of both sulfadiazine and aerosporin (polymyxin B) against Shigella organisms, it was considered worth while to treat a series of patients affected by shigellosis of comparable age and severity with the same methods employing the two aforementioned drugs in alternation with streptomycin. Thus, during the summer of 1948 we employed aerosporin in 16 cases of acute bacillary dysentery and administered sulfadiazine in 20 others. As noted previously, of the 34 patients treated with streptomycin, 25 were considered to be in the acute phase, and this latter group will be discussed, for purposes of comparison, in connection with data on the groups who received sulfadiazine or aerosporin.

All 61 patients with acute shigellosis were managed in the same fashion, and each case was followed with daily stool cultures during the course of therapy.

Aerosporin was administered exclusively by the oral route in all 16 patients. The dose most commonly employed was 3 mg. per kilogram of body weight every four hours. The daily dose of aerosporin ranged from 18 to 60 mg. Duration of treatment varied from 7 to 15 days, with an average of 10.5 days per patient. The sensitivity of the organisms to the aerosporin varied from 0.02 to 0.08 micrograms per cubic centimeter.

In the group of 20 patients receiving sulfadiazine therapy, the drug was given in a dose ranging from 0.25 Gm. to 1 Gm. every four hours. The duration of therapy varied from 5 to 21 days, with an average of 11.1 days per patient.

As was previously noted, the duration of therapy in the group treated with streptomycin averaged 10.7 days per patient. The streptomycin sensitivity in this group ranged from 3 to 5 micrograms per cubic centimeter.

A comparison of the rapidity of disappearance of the pathogen from the stool in the three groups may be considered to have some value as a therapeutic index of the efficacy of each drug. As will be noted in the accompanying table, all three drugs produced a prompt disappearance of the Shigella organism 2 days or less after the initiation of therapy. This slight variation was not considered statistically significant.

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[3] Ross, S.; Burke, F. G.; Rice, E. C.; Bischoff, H. W., and Washington, J. A.: Streptomycin in the Treatment of Salmonella Enteritis in Infants, New England J. Med. **240:** 602, 1949.

[4] The drug was supplied as syrup of streptomycin (50 mg. per cubic centimeter) by E. R. Squibb & Sons.

In 2 cases in the aerosporin-treated group, daily stool cultures showed the continued presence of Shigella organisms. After an unsuccessful trial of seven days of treatment with aerosporin in both cases, this drug was discontinued and the oral administration of streptomycin was instituted. Within two days, the stools showed a prompt clearing of Shigella organisms and both patients made an uneventful recovery. In the sulfadiazine-treated group, 1 patient was given sulfadiazine for nine days. However, daily stool cultures remained persistently positive for Shigella organisms. Orally administered streptomycin was substituted for sulfadiazine, and ten consecutive cultures during the course of streptomycin therapy were consistently sterile.

None of the group treated with streptomycin showed a refractoriness to the drug during the hospital stay, and in no instance was it necessary to substitute any other therapeutic agent.

Thus from the results obtained in this study, one may conclude that all three drugs are quite effective in the treatment of Shigella-caused enteritis when administered orally. In regard to the drug of choice in this infection, one would be justified in summarily dismissing aerosporin from further consideration in view of its toxicity. It would require a considerably larger series than ours, however, to categorically state that streptomycin is superior to sulfadiazine. However, oral administration of streptomycin could be used advantageously in patients with a sulfonamide-resistant strain of Shigella organisms as well as in those cases in which there exists a sensitivity to sulfonamide compounds. In this regard, one may take cognizance of the relatively higher incidence of shigellosis in military personnel, especially in the tropical areas, coupled with the frequent hazard of administering a sulfonamide drug to dehydrated patients. In these conditions there exists the possibility that orally administered streptomycin may be found to be of considerable use as a substitute drug in the treatment of Shigella enteritis.

Comparison of Streptomycin, Sulfadiazine and Aerosporin Therapy in 61 Cases of Shigella Enteritis

	Streptomycin	Sulfadiazine	Aerosporin
No. of acute cases..................	25	20	16
Av. duration of treatment (days)	10.7	11.1	10.5
No. positive stool cultures after treatment started (av.)..........	1.6	2.0	1.9

SUMMARY

1. Thirty-four infants and children with enteritis caused by Shigella organisms were treated with orally administered streptomycin.

2. In both the acute cases and the carrier group, a prompt disappearance of the pathogen from the stool followed the initiation of streptomycin therapy in every case. Clinically, the improvement was commensurate with the salutary effect observed bacteriologically. In 5 patients a cultural reversal was observed on stool culture within one month after discharge from the hospital. These may have represented either a relapse or a reinfection.

3. Comparison of orally administered streptomycin, aerosporin and sulfadiazine in the treatment of 61 patients with bacillary dysentery caused by Shigella indicates that all three drugs are effective agents. However, in view of the toxicity of aerosporin, streptomycin and sulfadiazine are the drugs of choice.

ACUTE HEMOLYTIC ANEMIA DUE TO NAPHTHALENE POISONING

A Clinical and Experimental Study

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In 4 cases of fulminating hemolytic anemia in young children observed during a period of two years the ingestion of moth balls consisting of pure naphthalene ($C_{10}H_8$) was the sole apparent etiologic factor. Experimental studies in dogs confirmed the hemolytic action of naphthalene. Since moth balls are a common and easily accessible household article, generally believed to be harmless, and since the American literature seems to contain no previous reports of this kind, the cases are reported in detail.

REPORT OF CASES

Case 1.—A. W., a Negro girl aged 2 years, was admitted to the Children's Hospital of Michigan with the chief complaint of passing wine-colored urine. She had been entirely well until four days prior to admission, at which time she had diarrhea and seemed generally ill. The next day she became lethargic and passed urine of greenish tinge. The following day she refused nearly all her food although she seemed more active than before. On the day before admission she became feverish and passed port wine-colored urine. She also complained of dysuria. When asked routine questions the informant denied that the child had ingested any poisons, chemicals or medicine. The following day, however, the child's father admitted on specific questioning that on the day of onset of symptoms he had removed from the child's mouth the remnants of a moth ball which had been sucked to a small size and that shortly afterward he had again found the child sucking on another moth ball.

The past history was noncontributory. There was no history of anemia or illnesses similar to that of the patient in the family.

Physical examination revealed a pale irritable child, who appeared feverish and acutely ill. There was no icterus of the scleras. The heart rate was rapid, and a loud blowing systolic murmur was heard over the pulmonic area. The liver and spleen were not palpable. The remainder of the examination revealed essentially normal conditions.

The urine was port wine in color and contained albumin (4 plus), 5 to 6 leukocytes per high power field and many granular casts but no red corpuscles. The result of the benzidine test for hemoglobin was strongly positive. Spectroscopic examination failed to disclose porphyrins. The hemoglobin concentration of the blood was 5.2 Gm. per hundred cubic centimeters. The hematocrit reading was 17 volumes per cent. Unfortunately, the results of the red blood cell count were lost. The reticulocyte count was 6.8 per cent. The white cell count was 19,700. Differential counts showed 59 per cent neutrophils, 34 per cent lymphocytes, 3 per cent monocytes, 3 per cent eosinophils and 1 per cent basophils. There were 6 normoblasts per hundred leukocytes. No sickling was demonstrable in wet preparation. In dried smears stained with Wright's stain the erythrocytes showed definite anisocytosis and microspherocytosis, polychromasia and fragmentation. In the fragmented cells the outline was irregular and jagged over part of the circumference; the

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hemoglobin was irregularly concentrated on one side, and in the remaining portion the structure was often barely visible and the contour faint (fig. 1).

A marrow aspiration disclosed a relative increase in leukopoiesis and a shift to the left in erythropoiesis.

Chemical examination of the blood showed no increase in methemoglobin or sulfhemoglobin. The oxyhemoglobin concentration of the plasma was 39.5 mg. per hundred cubic centimeters. The Mazzini test for syphilis gave a negative reaction. The blood urea nitrogen was 12.5 mg. and the serum bilirubin 1.76 mg. per hundred cubic centimeters. Throat cultures yielded a heavy growth of hemolytic streptococci, some colonies of pneumococci and Staphylococcus aureus.

The diagnosis on admission was acute hemolytic anemia and hemoglobinuria of undetermined cause. The patient was given multiple transfusions of compatible blood and received sodium bicarbonate and sodium lactate in an attempt to alkalinize the urine. She remained feverish for three days but on the third day became alert and began to eat. The urine continued to contain hemoglobin for two and one-half days and albumin and occasional casts for three days. Thereafter the urine was normal. The white blood cell count returned to normal within three days, and after that time nucleated red cells and fragmented cells and microspherocytes were no longer seen. The patient was discharged in good condition seven days after admission and remained in good health during the following year.

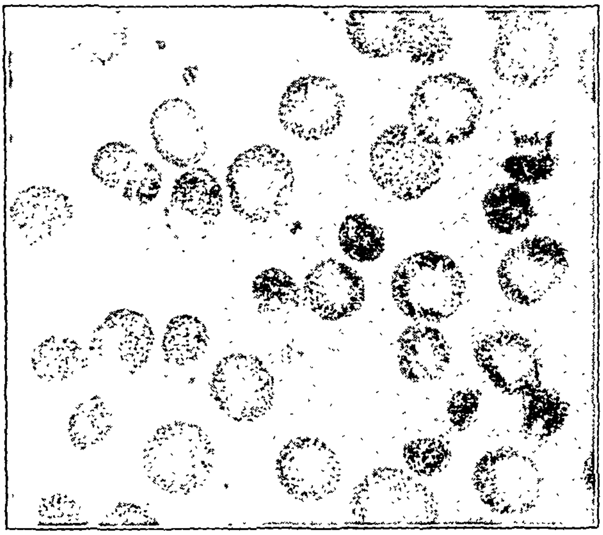

Fig. 1.—Blood smear, case 1. Note pronounced fragmentation of erythrocytes (Wright stain).

Urinalysis was supervised by Dr. Muehlberger, toxicologist for the Michigan Department of Health. A specimen obtained at the time of admission contained naphthol. A specimen collected the following day contained only a trace of naphthol, and all subsequent specimens were free of the compound, which is a derivative of naphthalene not found in normal urine.

The moth balls obtained from the parents consisted of commercial naphthalene.

Case 2.—H. S., a Negro boy aged 2 years, was admitted because of diarrhea of three days' duration. Earlier he had been entirely well. The stools had numbered six to eight daily, had been brownish green and watery, and had contained mucus. The child also became feverish, complained of nausea, vomited and refused to eat. On the second day of the illness the urine became red.

At the time of admission the temperature was 101 F. The child was pale (but not icteric), listless and acutely ill. The liver and spleen were not palpable. There was no sign of inflammatory disease of the respiratory tract.

The urine was port wine in color; it contained free hemoglobin and albumin but no red cells. Occasional leukocytes and granular casts were present.

The hemoglobin level of the blood was 4.2 Gm. per hundred cubic centimeters, the red blood cell count 1,780,000 and white cell count 25,000. The differential count was 58 per cent neutrophils and 42 per cent lymphocytes. There were 8 nucleated red cells per hundred leukocytes. The reticulocyte count was 10.8 per cent. There was no sickling of erythrocytes in wet preparations. The blood smear revealed the same features as those described in case 1, anisocytosis, microcytosis associated with spherocytosis, fragmentation of the red blood cells, polychromasia and, in addition, occasional Howell-Jolly bodies. Infrequent phagocytosis of erythrocytes by monocytes was seen.

The plasma oxyhemoglobin concentration was 54 mg. per hundred cubic centimeters. No increase in methemoglobin or sulfhemoglobin was demonstrable. The serum bilirubin level was 0.6 mg. per hundred cubic centimeters. Tests of the serum for cold hemolysins, autoagglutinins and isoagglutinins effective at various temperature in saline and albumin mediums were carried out with negative results.

Erythrocyte fragility was tested only by the "short" method of Straus and Faigin.[1] In 0.45 per cent saline solution there was 66 per cent hemolysis (normal less than 30 per cent). Reaction to the Mazzini test for syphilis was negative. The blood urea nitrogen was normal. The blood culture was sterile, and throat cultures yielded no pathogenic organisms. Marrow aspirations showed increased erythrogenesis.

The diagnosis on admission was acute hemolytic anemia and hemoglobinuria. On questioning the parents stated that one week prior to admission the child had sucked almost an entire moth ball and had probably ingested more moth balls during the following days. They had found two moth balls in the stool two days before admission. The course was somewhat more prolonged than that of the first patient but was otherwise similar. The response to blood transfusions and alkali therapy was favorable. Fever, lethargy, hemoglobinuria and albuminuria subsided gradually over a period of five days. Complete recovery ensued, and at the time of discharge results of the blood studies were within normal range.

Case 3.—L. B., a Negro boy age 2½ years, was admitted with the chief complaints of fever, sore throat and cough of three days' duration. The child had been entirely well until one week prior to admission, when he had coryza. A neighbor had seen him eating a moth ball four days before admission. On the same day he had become nauseated and had vomited. The mother administered a mixture of olive oil and liquid petrolatum in order to have the child vomit the moth ball, but the attempt was unsuccessful. The following day the child was feverish and complained of a sore throat. The fever persisted and swelling of the face, hands and feet was noted. The urine became dark red-brown two days before admission. The child had pain in the lumbar region and became pale.

In the past the patient had had numerous infections of the upper part of the respiratory tract as well as measles and whooping cough. The family history was noncontributory.

The patient was listless and appeared acutely ill. The scleras were slightly icteric. The mucous membranes were pale. The edge of the liver and the tip of the spleen were palpable. There was severe bilateral tenderness in the costovertebral angles.

Urinalysis showed albumin (3 plus), a trace of sugar, 3 to 4 red blood cells, 1 to 2 leukocytes and many granular casts. The result of the benzidine test was strongly positive. The urine was dark reddish brown.

Data on the blood are shown in table 1. The essential findings were the same as in cases 1 and 2. There was no sickling of the red cells, but fragmentation and spherocytosis were again noted. The plasma hemoglobin level was 38.0 mg. per hundred cubic centimeters. The icterus index was 64 units. However, hemoglobin and other pigments in the plasma probably interfered with accurate colorimetric readings. Blood urea nitrogen was within normal limits.

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[1] Straus, R., and Faigin, R.: Simplified Test for Fragility of Erythrocytes, Am. J. Clin. Path. 16: 437, 1946.

The Donath Landsteiner test for cold hemolysins was negative, as were tests for atypical warm isoagglutinins or autoagglutinins. Cold agglutinins of a titer of 1 : 8 were present in the serum. The erythrocyte fragility was decidedly increased (96 per cent hemolysis in 0.45 per cent saline solution).

Therapy consisted of two blood transfusions and alkalinization. Within three days there was definite improvement. The urine became normal, and on the eleventh hospital day the child was discharged in good condition.

Case 4.—D. T., a Negro boy aged 2 years and 3 months, was admitted because of listlessness and vomiting of three days' duration. On the day before the onset of these symptoms he had eaten the greater part of a moth ball. Subsequently he complained of abdominal pain and became exceedingly pale. The urine for a day became dark orange. The past history and family history were noncontributory.

Examination disclosed an extremely lethargic, irritable child who shortly afterward had a generalized convulsion. There was no icterus of the scleras. The tip of the spleen was palpable, and the liver descended 1 fingerbreadth below the right costal margin.

The urine was yellow and contained no abnormal elements other than a small amount of acetone. Examination of the blood disclosed severe anemia, normoblastemia, leukocytosis and reticulocytosis. The erythrocytes showed microcytosis, spherocytosis, fragmentation and an increased saline fragility. In a small number of erythrocytes Heinz bodies were seen in preparations stained with brilliant cresyl blue. There was also sickling of the majority of the cells. Because of this feature the blood of both parents was examined. Normal values were obtained in both, but the sickling trait was demonstrated in the father. The presence of the trait in only one of the parents seemed to indicate that the patient likewise had only the trait rather than sickle cell anemia.[2] This assumption was borne out by further observation and the return of red blood counts and reticulocyte counts to normal levels with recovery.

Table 1.—*Hematologic Data of Patients on Admission*

Case	Hemoglobin	Red Blood Count	Hematocrit	Reticulocyte Count (%)	Nucleated Red Cells per Cmm.	White Blood Count	Fragmentation	Spherocytosis	Sickling	Erythrocyte Saline Fragility	Plasma Hemoglobin	Serum Bilirubin	Hemoglobinuria	Albuminuria	Urinary Sediment (per HPF)
1 (A. W.)	5.2	....	17	6.8	1,115	18,585	+	+	—	....	39.5	1.76	+	+	Occ. WBC, many casts
2 (H. S.)	4.2	1.73	..	10.8	1,852	23,148	+	+	—	Increased *	54.0	0.06	+	+	Occ. WBC, many casts
3 (L. B.)	5.6	1.59	..	5.4	1,878	12,522	+	+	—	Increased *	38.0	?	+	+	Occ. WBC, RBC; many casts
4 (D. T.)	3.3	2.02	16	13.8	10,833	34,167	+	+	+	Increased	13.5	0.78	—	0	Rare RBC

* Short fragility method.

The Donath-Landsteiner test was negative, and neither isoagglutinins nor autoagglutinins were demonstrable. A cold agglutinin titer of 1 : 8 was obtained. The patient's cells gave a negative reaction to Coomb's test (detection of weak and incomplete Rh agglutinins).

The plasma hemoglobin was 13 mg. and the serum bilirubin was 0.78 mg., per hundred cubic centimeters. The blood urea nitrogen was in the normal range.

The patient received a single transfusion of 250 cc. of whole blood, which resulted in decided clinical improvement. The subsequent return of the blood values to normal is shown in figure 2.

EXPERIMENTAL DATA

Each of the cases represented an emergency at the time of admission, and it was therefore usually impossible to obtain serum for in vitro studies. Only in case 1 was a small amount of serum available. This material was diluted with isotonic sodium chloride solution and was incubated in a calibrated red-cell-counting pipet with whole blood from a normal donor of homologous type for three hours at 37 C. As a control, a corresponding dilution of normal homologous serum in the second donor was incubated with the same blood. Duplicate counts were made on each specimen. The count of the sample incubated with the patient's serum was 3,830,000; that of the control was 4,680,000. Both specimens were reincubated, but recount after a total of twelve hours of incubation revealed no further change. The result of this experiment, though suggestive, was not considered as conclusive evidence of an in vitro hemolytic effect of serum thought to contain absorbed naphthalene derivatives.

Naphthalene was given to 3 dogs (table 2). Varying amounts of pure naphthalene flakes were incorporated in the regular meat diet of the animals and were readily ingested. Preliminary determinations of hemoglobin, red blood cell count, hematocrit, reticulocytes, white blood cell count, serum bilirubin and, in 2 animals, erythrocyte fragility were made. Two of the dogs were in perfect health, the third was recovering from canine distemper which had caused moderate anemia. Since the blood values of this animal had shown stability over a five day period, it was believed that a decrease in these values after the ingestion of naphthalene would be significant.

Dog 1 received a total of 6.5 Gm. of naphthalene in divided doses during a five day period before any untoward symptoms were noted. On the fifth day the animal had diarrhea, the white blood count rose from a previous level between 13,500 and 15,000 to 25,500 and Heinz bodies suddenly appeared in the majority of the erythrocytes (fig. 3). On that day another 2 Gm. of naphthalene was given. The diarrhea persisted, the animal became lethargic and refused its food. A strong naphthalene odor of urine and stools was noted. On the seventh day the hemoglobin had fallen abruptly to a level of 5.6 Gm., the red blood count to 2,750,000 and the hematocrit to 20.5 volumes per cent; the Heinz body count had begun to drop, and the white blood count had risen to 32,000. Before these results were known the animal was given another 2 Gm. of naphthalene. Pronounced lethargy and ataxia were observed, and there was a further drop of the hemoglobin to 2.2 Gm. in the next three days. Fragmentation of erythrocytes, similar to that seen in the blood of the patients, was conspicuous. Simultaneously extreme leukocytosis (white blood count 119,000) developed. Reticulocytosis began on the eighth day and reached a maximum of 33.8 per cent on the twelfth day. The hemoglobin shortly began to rise, and eventually the animal made a complete recovery. By the eighteenth day the Heinz bodies had completely disappeared (fig. 4).

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[2] Neel, J. V.: The Genetics of Sickle Cell Anemia, to be published.

Dog 2 was given 3 Gm. of naphthalene in a single dose, an amount corresponding to the average weight of a moth ball. This was the animal with moderate anemia after an attack of distemper. The results of the experiment were similar in character and sequence to those in the first animal. On the second day Heinz bodies appeared in substantial numbers. On the third day the hemoglobin level began to fall, and by the eighth day a loss of approximately 3 Gm. per hundred cubic centimeters had occurred. There was severe leukocytosis during this period. Reticulocytosis had begun by the seventh day and reached a maximum of 19 per cent on the tenth day. Eventually all values returned to normal.

Dog 3 received an amount of naphthalene comparable to three moth balls in a single dose. Again lethargy, diarrhea and anorexia developed with the sequence of rapid rise in the number of Heinz bodies followed by a sharp drop in hemoglobin, fragmentation of red cells, leukocytosis and reticulocytosis. Eventual restoration of all blood values to normal levels ensued.

In each of the animals, an increase in the fragility of erythrocytes in hypotonic saline solutions was noted during the experiment and fragmentation of erythrocytes was evident in smears. The bilirubin concentrations of the plasma failed to rise significantly. In one of the animals transient albuminuria and slight microscopic hematuria were observed.

For in vitro studies plasma from dogs 2 and 3 obtained two days after ingestion of naphthalene was mixed with whole blood from a normal dog and incubated for one hour at 37 C. There was no change in the red blood count at the end of that time, but Heinz bodies were noted in the test specimen though they were absent in the saline control.

TABLE 2.—*Hematologic Data on Dogs*

	Days	Naphthalene Dosage (Gm.)	Hemoglobin	Red Blood Count (Millions)	Hematocrit	Reticulocyte Count (%)	White Blood Count	RBC Fragility	Heinz Bodies (%)	Remarks
Dog 1	0	0	13.1	6.78	41.5	0.2	14,400	....	..	Venesection of approximately 60 cc. for blood studies; cystostomy
Weight	1	0.5	....	....	....	...	......	....	..	
15 lb.,	2	1.0	11.5	5.50	37.0	0.2	13,250	....	0	
6.8 Kg.	3	2.0	11.5	5.43	37.0	0.1	13,700	....	0	
	4	3.0	10.5	4.92	33.0	0.1	13,400	....	0	
	5	2.0	10.7	5.25	35.0	0.1	25,500	....	87	Diarrhea
	6	2.0	10.2	4.20	33.0	0.1	32,000	....	96	
	7	2.0	5.6	2.75	20.5	0.1	32,400	....	..	Listless; Anorexia
	8	0.0	3.4	2.00	13.0	3.8	28,000	....	77	
	9	0.0	2.4	1.30	7.5	9.0	85,000	....	70	Ataxic
	10	0.0	2.2	1.24	7.5	14.9	119,000	Control	49	
	12	0.0	3.5	1.73	15.0	33.8	38,000	0.54 to 0.39	13	More active; Ataxia subsiding
	18	0.0	7.2	3.75	22.5	23.0	11,150	Dog 1	0	Asymptomatic
	22	0.0	9.8	4.20	31.5	7.7	11,250	0.60 to 0.30	..	
	36	0.0	11.6	4.70	....	0.2	9,300	....	..	
Dog 2	0	...	9.3	4.5	30.5	0.1	23,650	0.52 to 0.42	0	
Weight	1	3.0	....	....	....	...	......	....	..	
16 lb.,	2	...	9.1	4.40	31.0	0.1	49,200	....	69	Listless
7.3 Kg.	3	...	8.1	3.94	27.0	0.1	29,700	0.61 to 0.45	68	
	4	...	7.1	3.34	23.5	0.3	47,000	....	65	
	7	...	6.7	2.90	22.0	13.4	57,450	....	39	
	8	...	6.6	2.79	24.0	14.7	......	....	33	
	10	...	8.3	3.60	27.5	19.1	26,400	....	3	
	12	...	9.2	4.75	....	14.0	25,000	....	0	
	14	...	9.6	5.22	34.0	9.0	......	....	..	
	17	...	10.5	?	36.3	5.6	31,100	....	..	
	22	...	12.5	5.14	39.5	1.9	25,600	....	..	
	25	...	12.9	5.30	40.0	1.1	17,500	....	..	
	31	...	13.2	5.50	43.5	1.4	17,750	....	..	
	36	...	14.9	5.74	46.0	0.7	19,000	....	..	
Dog 3	0	...	14.4	6.63	49.0	0.1	15,400	0.49 to 0.40	0	
Weight	1	9.0	....	....	....	...	......	....	..	
13 lb.,	2	...	14.5	6.50	49.0	0.2	17,750	....	94	
5.9 Kg.	3	...	14.5	6.40	47.8	0.1	16,300	0.61 to 0.42	91	Listless; Vomiting; Diarrhea
	4	...	13.7	5.92	45.0	0.4	15,950	....	92	
	7	...	10.1	5.00	33.0	1.2	16,600	....	79	
	8	...	10.2	4.65	34.0	2.2	20,500	....	76	
	10	...	9.9	4.43	33.0	4.7	16,900	....	42	
	12	...	10.0	4.57	....	9.0	13,650	....	20	
	14	...	10.2	5.04	34.0	...	......	....	..	
	17	...	9.7	?	32.0	...	14,450	....	5	
	22	...	11.1	4.26	34.0	4.2	16,250	....	0	
	25	...	11.9	4.53	36.0	3.7	11,650	....	..	
	31	...	13.7	5.33	43.8	2.5	14,300	....	..	
	36	...	14.4	5.80	45.0	1.5	9,750	....	..	
	51	...	15.0	5.75	47.5	0.1	15,500	....	..	

COMMENT

To our knowledge the American literature contains no records of hemolytic anemia attributable to naphthalene poisoning. Most of the standard textbooks on pediatrics state that the substance is not soluble, passes through the digestive tract without absorption and is therefore harmless.[3] Textbooks on toxicology, however, refer to cases described in the foreign literature in which gastrointestinal and neurologic symptoms and anemia followed the ingestion of naphthalene.[4]

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[3] Mitchell-Nelson: Textbook of Pediatrics, ed. 4, Philadelphia, W. B. Saunders Company, 1948. Brennemann, J.: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1948.

[4] McNally, W. D.: Toxicology, Chicago, Industrial Medicine, 1937.

Goetze in 1884[5] observed restlessness, delirium, twitchings and cyanosis in a patient who had received large amounts of naphthalene, 6 to 7 Gm. daily for six days. On the seventh day the urine was black. Blood studies were not made.

Nash[6] briefly reported the development of urinary frequency, passage of black urine, diarrhea, transient anuria and headache and abdominal pain in a boy 13 years of age who had eaten a single moth ball. Unfortunately no data on the blood were given.

Prochownik[7] reported a fatal case of naphthalene poisoning in a boy 6 years of age who had received seven doses of 0.25 Gm. naphthalene as treatment for oxyuriasis. Within two days the child became restless and disoriented and began to vomit. The spleen became enlarged and icterus developed; the urine was scanty and contained hemoglobin and albumin. The patient died the following day.

Heine[8] described a woman who had taken seven consecutive doses of 0.4 Gm. of naphthalene for the treatment of oxyuriasis. Dysuria, weakness, drowsiness and numbness of the extremities developed within two days. The patient passed black urine, and her skin became icteric. Liver and spleen were palpable. The urine contained hemoglobin and albumin. The patient recovered.

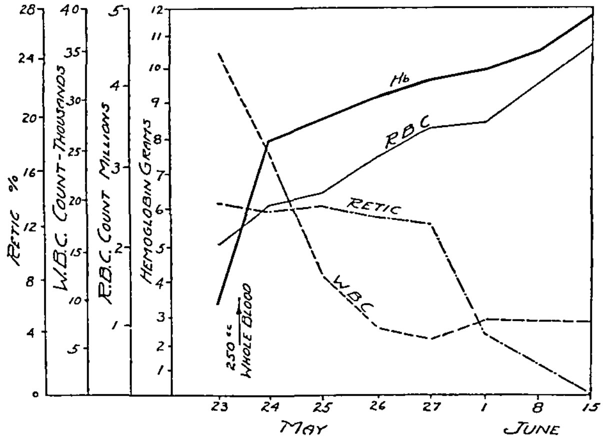

Fig. 2 (case 4).—Essential hematologic data during the period of observation.

Anemia of hemolytic type similar to that observed in our patients was reported by Smillie[9] in Brazil in 4 patients who had received beta-naphthol. Because a group of 77 other patients who had been given the same drug in comparable doses failed to exhibit anemia, Smillie concluded that special predisposing factors were required for the development of toxic effects.

Taylor and Russel[10] recorded anemia, icterus and hemoglobinuria in an African Negro who had ingested two moth balls five days earlier.

Konar, Roy and De[11] described the case of a man aged 24 who had taken an unknown amount of naphthalene, mistaking it for candy. Two days later the patient became pale, icteric and semicomatose. The hemoglobin on the fourth day was 30 per cent, the red blood count 2,410,000 and the white blood count 31,200. The urine was brown but gave a negative test for occult blood. The patient died, and naphthalene was demonstrated in the tissues, stomach contents and urine. The liver showed patchy necrosis.

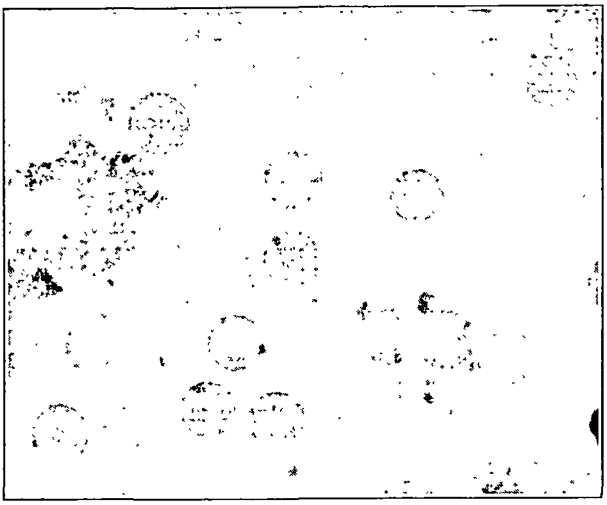

Fig. 3 (dog 1).—Blood smear on fifth day after the first dose of naphthalene showing Heinz bodies in erythrocytes (cresyl blue stain).

The results of our animal experiments leave little doubt that naphthalene is a toxic substance capable of being absorbed and of producing an anemia of hemolytic type. The order of events—the appearance of Heinz bodies preceding a sharp fall in hemoglobin, hematocrit and red blood count; fragmentation of erythrocytes; leukocytosis and reticulocytosis, and subsequent restoration of the blood values to normal levels—is characteristic for the effect of a hemolytic poison comparable to the well known action of phenylhydrazine.

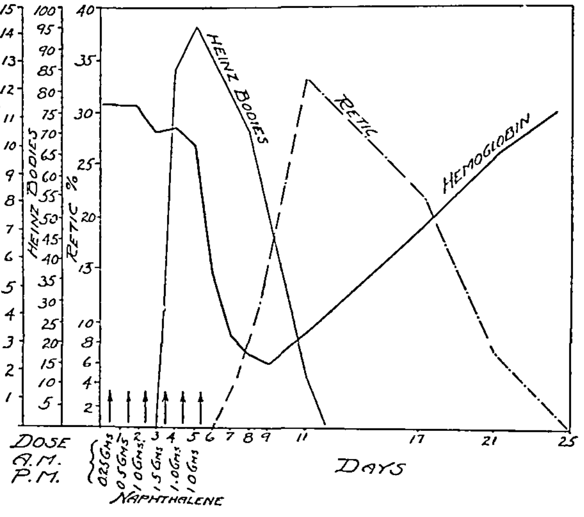

Fig. 4 (dog 1).—Hematologic response to naphthalene.

In each of the 4 patients described by us a definite history of naphthalene ingestion was obtained, although the exact amounts could not be established. In 1 case absorption was demonstrated by isolating naphthalene derivatives in the urine. Each child had previously been in perfect health and had not been exposed to other chemicals with hemolytic action. Within a period varying from three to seven days, severe hemolytic anemia developed in each case, and in 3 of the 4 patients hemoglobinuria was observed. In the fourth case a history of passing dark "orange" urine suggested that hemoglobinuria may have been present before admission. The plasma oxyhemoglobin was elevated in all 4 patients. No history of infection was obtained in 3 patients, and no clinical evidence of active infection was found at the time of admission in any of the children. The results of the various tests for isoagglutinins, autoagglutinins, cold agglutinins and cold and warm hemolysins were uniformly negative. Fragmentation of the red blood cells was an outstanding feature of the blood picture in each case, and Heinz bodies were found in the only case in which a search was made at the time of admission. In all cases increased erythrocyte fragility in hypotonic saline solution was demonstrated. The patients eventually made a complete recovery with return of the blood values to normal levels.

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[5] Goetze, cited by M. Zangerle: Ein Fall von Naphthalinvergiftung, Therap. Monatsschr. **13**: 122, 1899.

[6] Nash, F. L.: Naphthalene Poisoning, Brit. M. J. **1**: 251, 1903.

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[9] Smillie, W. G.: Betanaphthol Poisoning in the Treatment of Hookworm, J. A. M. A. **74**: 1503, (May 29) 1920.

[10] Taylor, C. G. S. O., and Russel, H.: Blackwater Fever and Naphthalene Poisoning, West African M. J. **5**: 48, 1932.

[11] Konar, N. R.; Roy, H. K., and De, M. N.: Naphthalene Poisoning, Indian M. Gaz. **74**: 723, 1939.

These data, positive as well as negative, are characteristic of acute intravascular hemolysis secondary to the presence of a toxic substance and comparable to those obtained in the experimental animals which had been given naphthalene. The early phase of naphthalene poisoning, characterized by the development of Heinz bodies in the experimental animals, was, of course, not studied in the human subjects, who were hospitalized only after the severe anemia had already developed.

The mechanism of hemolysis induced by naphthalene is not entirely clear. It is evident that the substance is absorbed in the gastrointestinal tract. The quantitative aspects of absorption are unknown and may be highly variable. According to Stekol,[12] naphthalene is partly excreted into bile by the liver and partly detoxified by oxidation to beta-naphthol and conjugation with glycuronic, sulfuric and mercapturic acids. The conjugates are excreted by the kidneys. Such naphthalene as has escaped detoxification enters the general circulation. From our limited experiment, which consisted in exposure of normal erythrocytes to the patient's serum and production of Heinz bodies in canine erythrocytes exposed to serum from a poisoned animal, it would appear that naphthalene in the form of soluble compounds causes hemolysis in vitro by direct action on red cell membranes.

Several observers have commented on the differences in dosage of naphthalene tolerated by different persons. Variations in the absorption and the efficiency of detoxification by the liver may explain these discrepancies.

The general picture strikingly resembles that of so-called Lederer's anemia or acute hemolytic anemia of unknown origin. It is therefore noteworthy that the history of moth ball ingestion in our cases was obtained only after specific questioning and was not brought out by routine questions regarding chemicals, poison or drugs. Had the information concerning naphthalene not been obtained, each case undoubtedly would have been labeled Lederer's anemia. It is likely that some cases reported in the literature under that title were in reality instances of naphthalene poisoning. Lederer's anemia is often attributed to infection, chiefly because of the concomitant symptoms of fever, lethargy, leukocytosis and gastrointestinal manifestations. It is obvious that these phenomena can be produced by the severe hemolytic process itself.

The diagnosis of naphthalene poisoning depends primarily on an accurate history. It will be aided by a consideration of the age incidence. All our patients were approximately 2 years old, an age group particularly prone to the ingestion of household poisons. The clinical symptoms begin with listlessness and anorexia followed by vomiting and other gastrointestinal disturbances . Eventually pallor is noted and hemoglobinuria occurs, if the condition is severe.

Among physical observations the absence or slight degree of splenomegaly and the absence of appreciable icterus appear significant.

The laboratory results are those of severe acute hemolytic anemia and usually hemoglobinuria. The brown color of the plasma, probably denoting the presence of methemalbumin, should suggest sudden intravascular hemolysis. Free hemoglobin is demonstrable in the plasma in the acute phase. Fragmentation of red blood cells and the presence of Heinz bodies are characteristic features of toxic hemolysis. Urinalysis shows hemoglobin, albumin and occasional leukocytes and granular casts. An odor of naphthalene in urine and stools should be looked for in suspected cases.

The management of the condition obviously does not include splenectomy, and an accurate etiologic diagnosis is therefore of prime importance. The treatment of choice consists of transfusions as indicated by the blood studies. In the presence of hemoglobinuria it would seem wise to give alkalis in amounts sufficient to produce an alkaline urine, even though the effectiveness of this measure is doubtful.

SUMMARY

Attention is called to the occurrence of severe hemolytic anemia and hemoglobinuria as the result of naphthalene ingestion, and 4 pertinent cases are reported. Hemolytic anemia preceded by the appearance of Heinz bodies in the erythrocytes was produced in dogs. Heinz bodies were also produced in vitro by exposing normal canine erythrocytes to the plasma of dogs who had been fed naphthalene. A review of the literature disclosed a small number of cases of anemia and hemoglobinuria following naphthalene intoxication reported exclusively in the foreign literature. The condition arises chiefly in children as the result of accidental poisoning, and in view of the availability of moth balls, it may be commoner than heretofore believed. Differentiation from so-called Lederer's anemia is difficult unless a history of ingestion of naphthalene is specifically elicited.

5224 St. Antoine Street.

Vitamin B Complex Deficiency.—Early signs of endemic vitamin B complex deficiency, and also of experimentally induced deficiency, include non-specific complaints such as decreased appetite, easy fatigability, lack of ambition and nervousness as well as personality disturbances, including irritability, moodiness, depression, vague fears, lassitude and quarrelsomeness. In acute experimental deficiency, outstanding manifestations are disinclination to spontaneous activity, and personality alterations of psychoneurotic type, i. e., depression hypochondriasis and hysteria. Long before these symptoms appear, the urinary excretion of the B vitamins has fallen to low levels.—Grace A. Goldsmith, Chemical Measurements in Relation to Physical Evidence of Malnutrition, *Federation Proceedings*, June, 1949.

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[12] Stekol, J. A.: The Metabolism of Naphthalene in Adult and Growing Dogs, J. Biol. Chem. **110:** 463, 1935. Stekol, J. A., and Mann, F. C.: Studies on the Mercapturic Acid Synthesis in Animals, ibid. **117:** 619, 1937.

TOPICAL BACITRACIN THERAPY OF PYOGENIC DERMATOSES

A Clinical Report

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MAJOR J. SIDNEY RICE
and
LIEUTENANT COLONEL LOUIS S. LELAND
Medical Corps, United States Army

The literature is replete with evidence of the high index of allergenicity of the more effective agents used in the therapy of the various pyodermas. The alarming incidence of the apparent induction of hypersensitivity to such valuable medicaments as sulfonamide drugs and penicillin when they are used topically to treat the minor dermatoses, thus vitiating their future usefulness in generalized and systemic infections, has prompted the cautioning editorial by Sulzberger and Baer in the "Year Book of Dermatology."[1] It is therefore expedient that information concerning the useful and less allergenic therapeutic agents be promulgated widely. We are reporting some significant clinical results which we have noted following the topical administration of a new antibiotic, bacitracin. These results corroborate the findings of Miller, Slatkin and Johnson reported recently in the *Journal of Investigative Dermatology.*[2]

HISTORICAL DATA

In *Science* (Oct. 12, 1945) Johnson, Anker and Meleney[3] reported the recovery of a new antibiotic, bacitracin, from a strain (Tracy I) of Bacillus subtilis. It was active in vitro mostly against gram-positive organisms and the Gonococcus and Meningococcus. In vivo studies showed that it protected mice against experimentally induced hemolytic streptococcic infections and guinea pigs against experimentally induced gas gangrene infections. Meleney and Johnson[4] reported 100 surgical infections treated locally by topical applications and direct injection of bacitracin into furuncles, carbuncles and deep and superficial abscesses. An ointment containing the antibiotic was used for open lesions. The results were favorable in 88 per cent of the cases, and response was rapid. Bacitracin did not cause irritation of the conjunctiva. It was not locally toxic or irritating and its activity was not inhibited by plasma, blood, pus, broken down tissue or organisms which produce penicillinase. They concluded that bacitracin would be of value if it succeeded where penicillin and sulfonamide compounds did not.

Scudi and Antopol[5] studied the toxicity of bacitracin in mice and rats. Intraperitoneal toxicity was greater in rats than in mice. They found that the subcutaneous LD_{50} was two to seven times the intraperitoneal LD_{50}. A dosage of 3.75 Gm. per kilogram failed to produce death. Mice receiving one, ten and twenty-five times the therapeutic dose for five days gained in body weight. Tests with isolated guinea pig ileum indicated that bacitracin contains a minute amount of histamine-like substance.

From studies on the absorption and excretion of bacitracin in the dog, Scudi, Clift and Krueger[6] determined that bacitracin is destroyed in the gastrointestinal tract. Following its subcutaneous, intramuscular and intravenous injection high levels of the agent were obtained in the blood. The concentration fell least rapidly after subcutaneous injection. No toxic symptoms were observed following subcutaneous or intramuscular injections. Rapid intravenous injection of large doses produced nausea and muscular spasm. Small doses produced no such effect. Urinary excretion following parenteral administration of bacitracin appeared to increase with the dose but varied widely, from 7 to 98 per cent of the dose administered. High concentration in the urine persisted for more than seven hours. Bacitracin did not penetrate the red blood cells. Low spinal fluid concentrations as compared with serum concentrations were obtained in studies made with 5 monkeys.

Results of Bacitracin Therapy in One Hundred and Thirty-Eight Cases of Pyogenic Disease

Disease	No. of Cases	Cured	Improved	Failed	Minimum and Maximum No. of Days Required for Cure	Average No. of Days Required for Cure
Impetigo	46	46	—	0	2 to 10	4.7
[illegible]	55	55	—	0	2 to 35	11
[illegible]	15	15	—	0	3 to 39	9
Folliculitis	11	7	3	1	4 to 28	15
Sycosis vulgaris	4	1	1	2	—	21
Hidradenitis suppurativa	2	0	0	2	—	—
Decubitus ulcers	3	3	—	0	14 to 32	25
Pyoderma gangrenosum	1	1	—	0	—	67
Bismuth slough	1	—	1	—	Marked improvement of indolent lesion within 2 wks.	

Eagle and associates[7] determined that the total urinary excretion of bacitracin in man was 87 per cent in six hours; the rate of excretion in the first hour was one-third that of penicillin G, but after two hours excretion of bacitracin was more than five times as rapid. The serum concentration of the agent following intravenous or intramuscular injection varied in linear proportion to the dosage. In man, levels two hours after injection were four times greater than the average observed with penicillin G. Therapeutic levels of bacitracin were maintained for 2.5 to 6.8 hours as compared to 1.2 and 2.1 hours with penicillin.

More recent investigation of the effect of bacitracin has contraindicated its parenteral administration in man because of its high renal toxicity. Presently, the oral administration of bacitracin in amebic dysentery indicates that it may well be a new and valuable amebacide. Confirmatory investigation is now in progress.

Bacitracin used in this study was donated by Commercial Solvents Corporation, New York.

Instructor in Dermatology, Georgetown University School of Medicine, and attending staff physician, Walter Reed General Hospital (Dr. Derzavis).

The opinions expressed are those of the authors and are not to be considered the official opinion of the medical department of the United States Army.

Clinical studies herein reported were carried out at the Walter Reed General Hospital and in the Division of Dermatology, Georgetown University Service, Gallinger Municipal Hospital.

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ALLERGENICITY

To determine the human sensitivity to bacitracin, 150 adults were patch tested with bacitracin ointment (1,000 units per gram of petrolatum) for forty-eight hours. All tested areas were negative for reaction. A fortnight later, 50 of these previously tested persons were retested by the patch method on the same or approximate sites for another forty-eight hour period. All test sites were again normal after the patches were removed.

These results seemed indicative of low allergenicity and were subsequently corroborated by the occurrence of only 1 case of dermatitis of the contact type among the 138 patients subsequently treated with bacitracin ointment. This unique patient was not only allergic to the ingredients of bacitracin ointment (bacitracin and petrolatum) but also reacted violently to liquid petrolatum, soybean oil bases, olive oil, wool fat, lard, greaseless ointment bases, carbowax,® quinoline, iodochlorohydroxyquinoline (vioform®) and sulfonamide compounds. He was able to tolerate penicillin solution topically and penicillin parenterally in a vehicle of oil and wax.

MATERIAL AND RESULTS

Since we were interested in a comparison of the topical therapeutic and sensitizing potencies of bacitracin, penicillin and the sulfonamide drugs on dermatoses, only diseases (namely, the pyodermas) which respond well to the last two medicaments were considered. A total of 138 patients were treated, and data given are in the accompanying table.

COMMENT

It is our impression that bacitracin is the most effective agent we have used in the therapy of superficial streptodermas and staphylodermas. Response to this topically applied agent is at least as rapid as responses to sulfonamide compounds, penicillin, chlorohydroxyquinoline, iodochlorohydroxyquinoline nitrofurazone (furacin®) and ammoniated mercury. More important is the extremely low incidence of allergenicity of the bacitracin preparation used in this investigation. The only instance of dermatitis venenata occurred in a patient with pyoderma and chronic lymphatic leukemia who was hypersensitive to a multiplicity of therapeutic agents.

The direct contact of bacitracin with the infected area is evidently necessary to effect a cure. This is evident in the rapid response of such superficial pyodermas as impetigo contagiosa and infectious eczematoid dermatitis. Contrariwise, the deeper folliculitides, including sycosis vulgaris and hidradenitis suppurativa, exhibited failures in roughly the same proportion as we had experienced with other antibacterial agents. *Of particular note is the exceedingly rapid response in* most cases of impetigo contagiosa. Many of these eruptions were dry and cured within forty-eight hours of the initiation of therapy.

Attention is directed toward the healing effect of bacitracin ointment on decubitus ulcerations in 3 instances. These patients (an amputee, a paraplegic and a cancer victim) had received numerous therapeutic routines and agents with poor responses. Bacitracin ointment has retained a prolonged healing effect in all 3. In 1 case of pyoderma gangrenosum there was rapid improvement in the existing lesions, but complete healing without new lesions did not occur until the associated ulcerative colitis was effectively controlled.

It is interesting to contrast the rapid effectiveness of bacitracin incorporated in petrolatum with that of other antibacterial agents administered in a simple grease base. Ammoniated mercury, for example, may be ineffective in petrolatum; whereas, although the miscibility of our greasy ointment with the watery exudate of impetigo contagiosa was poor, the curative effect was rapid. The therapeutic potency of bacitracin must indeed be extremely high.

SUMMARY AND CONCLUSION

One hundred and thirty-eight patients with deep and superficial pyodermas were treated with an ointment consisting of 1,000 units of bacitracin per gram of petrolatum. Response to therapy was rapid and effective in all lesions wherein direct contact with the bacitracin ointment was obtained.

There was only 1 proved case of hypersensitivity to this new antibiotic among the 288 patients (138 clinical and 150 patch test cases) in this study.

It may be concluded that bacitracin is a new and potent agent for the treatment of the accessible pyodermas. Of particular note is its extremely low index of allergenicity as evident in results obtained at this time.

1835 Eye Street, N. W. (6) (Dr. Derzavis).

Clinical Notes, Suggestions and New Instruments

POISONING DUE TO TETRAETHYLPYROPHOSPHATE

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When allied teams entered Germany after the war, they found the Germans using, for control of aphids, an insecticide which had been developed as a substitute for nicotine. The active ingredient of this compound was tetraethylpyrophosphate (TEPP), a powerful cholinesterase inhibitor. This insecticide recently has been made available in this country, one of the commercial preparations being vapotone-XX.® The label of the manufacturer[1] lists the ingredients as tetraethylpyrophosphate 20 per cent, related organic phosphates 30 per cent and inert ingredients 50 per cent. Recently a case of poisoning due to agricultural use of this compound was encountered.

REPORT OF CASE

A Negro aged 17 was admitted on the evening of June 14, 1949, retching, salivating profusely and in a semistupor. It was difficult to obtain an adequate history, and all that could be learned was that he had been spraying melons with vapotone.® The next day a more complete history was obtained. Shortly after eating his noon meal, he had begun to spray with this compound, diluted 7 ounces to a gallon of water (0.21 liter to 3.78 liters). He had used it before without ill effects, although this time the can leaked more than usual and his back became wet. About 2:45 p. m. he sliced a melon and ate it without washing his hands. The slices were cut lengthwise, and his hands would have touched the portions that he later ate. When he was finished eating he sliced a piece for his companion, but this other boy did not subsequently become ill. About fifteen minutes later he became weak and was unable to see; there was a tightness in his chest, abdominal cramping, diarrhea and vomiting. On admission the blood pressure was 150 systolic and 90 diastolic, the pulse rate 56, strong and bounding, and the respiratory rate 24. His breath had a characteristic and familiar, although never definitely identified, odor, which may have been due to the solvent. His pupils were extremely constricted, being less than 1 mm. in greatest diameter. There was profuse salivation, about 2 ounces (60 cc.) of saliva being produced within a thirty minute period. Although he answered questions adequately, there was an apparent drowsiness and disinterest. He vomited occasionally, but there was no abdominal rigidity. The deep reflexes were generally hypoactive, and no pathologic reflexes were present; however, after a tendon had been struck there were slow, repeated tendon jerks, six to eight in number, about one-fourth to one-half second apart. All over the body there was a slow wavelike contraction of the muscle bundles. There was twitching of the fingers and corners of the mouth. The spinal fluid pressure was 160 mm. with no cells, the protein level was 43 mg., sugar 76 mg. and chlorides 672 mg., per hundred cubic centimeters. The white blood cell count was 13,000, with 90 per cent polymorphonuclear cells. The hematocrit reading was 43. Urine had a specific gravity of 1.018 with no sugar or albumin and a normal microscopic appearance. The blood sugar determination was 143 mg. per hundred cubic centimeters, the carbon dioxide-combining power 48 volumes per cent, the chlorides 516 mg. and the blood urea nitrogen 15 mg. per hundred cubic centimeters. The next morning there was still some abdominal cramping and vomiting, but by afternoon all symptoms had disappeared. The blood urea nitrogen on June 20 was 29 mg. per hundred cubic centimeters, but two days later it had dropped to 11 mg. Liver function tests showed negative cephalin flocculation and a normal thymol. There were no mental symptoms except for the aforementioned drowsiness at any time. He was discharged on June 22 with no residual symptoms.

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[1] A communication received from the manufacturer after preparation of this paper gives the composition of the insecticide in detail. Xylene is used as a diluent, apparently accounting for the odor noted on the patient's breath. The "related phosphates" are other ethyl phosphates, but a more exact composition is not stated. A copy of the label sent with their letter contains much more detailed information than was available on the material used by the patient. It recommends use of protective clothing, rubber gloves and respirators and discusses toxic symptoms. The recommended dilution is ½ pint to 100 gallons (0.24 liter to 378 liters). As can be seen, this patient used an extremely strong solution and took not even elementary precautions.

COMMENT

Tetraethylpyrophosphate is an irreversible inhibitor of cholinesterase, the effects lasting for twenty-four to thirty-six hours. Except for a shorter duration of action, its pharmaceutic effect is essentially the same as that of diisopropylfluorophosphate, which has been used for some time in physiologic research. As can be seen, the foregoing symptoms are typical of the postulated effect of an excess of acetylcholine at cholinergic nerve endings—a stimulation of the constrictor pupillae, of salivary glands, of the sphincter at the cardiac end of the esophagus, of smooth muscle in blood vessel and intestinal walls, and of skeletal muscles generally. Burgen and associates [2] have stated that in toxicity experiments 1 to 3 mg. of tetraethylpyrophosphate per kilogram of body weight produces hyperexcitability, twitching, salivation and convulsions. The lethal dose for rats is 2 mg. per kilogram orally and 40 mg. per kilogram on the skin. Hexaethyltetraphosphate is a related compound, the effect of which may depend on hydrolysis to tetraethylpyrophosphate. The former is one-half to two-fifths as toxic as the latter. If it is assumed that the related phosphates mentioned on the insecticide label have about the same range of toxicity as hexaethyltetraphosphate and that 1 mg. of tetraethylpyrophosphate per kilogram of body weight is sufficient to produce the symptoms noted, the oral dose of the dilution which the patient used would need to be 3.6 cc., or the amount on the skin approximately 70 cc., or any comparable combination of the two. The commercial preparation is labeled poison, but the label does not mention the possibility of absorption of the product through the skin or antidotes effective against the compound.

Because the composition of the preparation could not be learned at the time of admission, and because the patient stated that he was attempting to kill plant lice (for which nicotine is often used) and had symptoms similar to those of nicotine poisoning, it was assumed that his symptoms were due to nicotine and no treatment was given. A telegram from the Food and Drug Administration the next day stated that the antidote for tetraethylpyrophosphate is atropine, 1/100 grain (0.6 mg.), to be repeated until dilatation of the pupils takes place, plus anticonvulsive treatment.

SUMMARY

A case of poisoning with a potent new insecticide in the group of the cholinesterase inhibitors is reported. In view of the small dose necessary to produce symptoms and the possibility that poisoning may occur through cutaneous absorption of the compound, it is recommended that practitioners be on the lookout for such cases and that commercial compounds of this type be labeled to impart more detailed information for the protection of their users.

3305 Carol Drive.

UNUSUAL REACTION TO ANT BITES

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On July 12, 1949, Staff Sergeant W. J. M. reported to the dispensary, Station Hospital, Randolph Field, Texas, in extreme distress; he was able to blurt out that he had been bitten by ants. His entire body was covered with an urticarial rash; his eyes were swollen nearly shut; he was clawing frantically at his chest, arms and neck, and his breathing was stertorous and accompanied by a frothy, mucous expectoration from the mouth. He was cyanotic and appeared to be on the verge of shock.

The patient was given 0.4 mg. of epinephrine; he was stripped and showered to remove ants which were on the upper part of the arm, and he was then given oxygen. The chest was full of moist rales, and preparations were made to perform a tracheotomy. However, his breathing became less labored and he was given 100 mg. tripelennamine hydrochloride (pyribenzamine hydrochloride®) orally. Relief was of short duration, and it was decided to give the patient intravenous procaine therapy, which was started at once. Three hundred milligrams of procaine hydrochloride in 300 cc. of 5 per cent dextrose was given slowly, with almost instant relief from symptoms. However, paroxysms (four in all) recurred during treatment, but at the end of two hours the patient was quiet and the rash had disappeared. The patient' slept until evening, when he ate an average meal. His only complaint was of slight substernal soreness. The next day the patient gave the following history:

On the day of the attack, the patient finished preflighting a plane and sat down, resting his bare arm on the runway curbing. He felt the ant bites and almost immediately began to itch and felt his eyes start to swell. He started for the hospital but did not make it and was picked up in a car and brought in. His first attack of this nature had occurred in 1945, when he was bitten by an unknown insect while he was in military service on Guam. He was hospitalized for a week with identical symptoms; he stated that he had received injections of epinephrine almost hourly for relief. In 1948 he lost three fingers in a hunting accident and was given gas gangrene antitoxin in a civilian hospital. This, too, was followed by a similar episode, although the respiratory embarrassment was much less and the duration was only five days. He further stated that mosquito bites cause a severe local reaction, but that as a child he was stung by bees and wasps without any particular disability.

From an etiologic point of view, it is possible to postulate that insects which cause this patient distress either inject a protein with the bite or break down homologous protein to produce the reaction. Whatever the mechanism, the patient released histamine when bitten by ants and this reaction was controlled with epinephrine, tripelennamine and procaine. The amount of epinephrine used and the temporary nature of the relief afforded by this drug would rule this out as the therapeutic agent of choice. It is difficult to determine which of the other two compounds was specific. Possibly either alone might have produced the cure. Unfortunately, the distress of the patient was too great to permit a good clinical test of tripelennamine alone, which apparently gave some relief from symptoms.

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From the medical service, Station Hospital, Randolph Air Force Base, Randolph Field, Texas.

POSITIVE METHYL ALCOHOL REACTIONS IN THE TISSUES OF A YOUNG PERSON DYING IN DIABETIC COMA

HENRY SIEGEL, M.D.
and
HARRY SCHWARTZ, B.S.
New York

This report describes the presence of a substance giving the color reactions of methyl alcohol in the tissues of a young girl dying of diabetes mellitus complicated by acidosis and coma. As far as the authors are aware, such a finding has not previously been reported.

The circumstances surrounding the death did not permit an orderly elicitation of the facts. This explains the gaps in the evidence needed to fulfil all the criteria for an absolute diagnosis of diabetes mellitus. The facts, however, are adequate to support such a diagnosis.

REPORT OF CASE

A white girl aged 15 was admitted to a hospital at 1:30 a. m. in stupor. The father stated that for the past few weeks the girl had been losing weight, although she had been eating fairly well. About one week before admission to the hospital she had consulted a physician because her menses had not begun. She was given an injection of an endocrine substance. Three days before admission she began to complain of mild abdominal pains tending to be localized in the right upper quadrant. Despite this, she went to a children's party that same evening and consumed a large amount of ice cream, candy, cake and soda. The next day she revisited the physician because of the abdominal pains and slight vomiting. She was given a second subcutaneous injection of an endocrine preparation, and a dextrose solution was administered rectally to control the vomiting. The endocrine preparation and the dextrose solution were later analyzed but did not give methyl-alcohol-like reactions. The mild abdominal pains persisted for another two days. When the girl went into stupor the family brought her to the hospital.

On admission it was noted that she was an underdeveloped and undernourished young girl whose tongue was remarkably dry. The rectal temperature was 98.6 F., the pulse rate was 120 per minute and the respiratory rate was 25 per minute. The abdomen was slightly rigid, but there was no distention, tenderness or rebound tenderness. The remainder of the physical examination revealed normal conditions. The white blood cell count was 16,400 with 80 per cent polymorphonuclear leukocytes and 20 per cent lymphocytes. The hemoglobin content was 93 per cent. An infusion of 1,000 cc. of 5 per cent dextrose in isotonic sodium chloride solution was started, being completed several hours later. The temperature remained normal, but the pulse and respiratory rates increased, the former averaging 140, the latter 35 per minute. Eight hours after admission the patient had a severe convulsion which lasted several minutes and was followed by several slight convulsions. She died nine hours after admission. Urinalysis made several hours after the infusion had been started revealed a sugar content of 1 per cent and gave a 2 plus reaction for acetone.

Autopsy revealed a somewhat underdeveloped young girl who was notably undernourished. The only gross observations of note were an occasional petechial hemorrhage in the leptomeninges and general visceral congestion. Pieces of each tissue were fixed in 4 per cent formaldehyde solution, embedded in paraffin and stained with hematoxylin and eosin.

Histologic examination of the pancreatic tissue disclosed that in an occasional island of Langerhans some of the cells contained large eosinophilic hyaline droplets. The liver was normal except that many of the periportal liver cord nuclei revealed the vacuolar changes associated with glycogen deposition. The number of nuclei manifesting this change was distinctly more than that occasionally observed in the liver of a nondiabetic person. In the kidney the cytoplasm of the epithelial cells of the loops of Henle exhibited advanced vacuolar changes. The brain revealed an occasional petechial hemorrhage in the leptomeninges.

A routine analysis of the stomach contents and brain for all poisons and of the liver and kidneys for metallic poisons resulted negatively, except in the brain there were small amounts of a substance which gave the reactions of methyl alcohol.[1] Faint traces of this substance were also found in the stomach contents. Five hundred grams of brain and one half of the stomach contents (about 1 ounce, 28 Gm.) were steam-distilled separately. In each instance 100 cc. of steam distillate were collected. The distillate was oxidized with a red hot copper spiral. This procedure oxidizes methyl alcohol to formaldehyde. The following tests were made on the oxidized and unoxidized distillates.

1. Distillate plus phenylhydrazine hydrochloride plus sodium nitroferrocyanide plus sodium hydroxide. A blue color which gradually faded denoted the presence of formaldehyde.

2. Denigès' test. To the distillate was added concentrated sulfuric acid and then Schiff's reagent. The presence of formaldehyde was indicated by a violet red color.

3. Hehner's test. To the distillate was added an equal volume of milk and a trace of ferric chloride. The mixture was strongly acidified with hydrochloric acid and then heated in a boiling water bath. A violet color denoted the presence of formaldehyde.

With each test the unoxidized distillate gave a negative reaction and the oxidized distillate a positive reaction for formaldehyde. A special investigation by one of us as well as by the police revealed no possible source where the girl might have obtained methyl alcohol. There was no familial history of diabetes.

COMMENT

The diagnosis of diabetes mellitus is well substantiated by the histologic observations and the clinical history. The combination of eosinophilic droplets in the cells of the islands of Langerhans, vacuolar swelling of the periportal liver cord cell nuclei and vacuolar cytoplasmic changes in the loops of Henle is found only in untreated diabetes mellitus.

The tests applied to the oxidized distillate gave the color reactions of formaldehyde. In tests of the unoxidized distillate results were all negative. Methyl alcohol is claimed to be the only substance known at the present time which is volatile with steam and which when oxidized with a red hot copper spiral will give all these results.[2] This indicates that methyl alcohol or a substance giving the same reactions had been distilled out of the tissues. Whether the substance was originally present in the tissues in the free state or whether it is a hydrolytic, degradation or other type of product must still be determined.

This observation is important in forensic medicine. It emphasizes the necessity of ruling out diabetic acidosis in all cases in which the color tests indicate the presence of small amounts of methyl alcohol and certainly in all sporadic cases, particularly when the source of methyl alcohol has not been determined. Death can probably be attributed to the exogenous poison when the presence of large quantities of methyl alcohol is revealed by the color reactions.

There is little point in speculating at this stage where the substance giving positive colorimetric reactions for methyl alcohol fits into the intermediary metabolism of foodstuffs in the patient with diabetes mellitus complicated by acidosis and coma. Whether similar tests can be obtained in the tissues of those dying from diseases complicated by acidosis must still be determined.

SUMMARY

1. Positive colorimetric reactions usually produced by methyl alcohol were obtained in the steam distillate from the brain of a young girl whose death resulted from diabetes mellitus complicated by acidosis and coma.

2. The importance of this observation in medicolegal investigations is discussed.

From the office of the Chief Medical Examiner, City of New York.

[1] Gonzales, T. A.; Vance, M., and Helpern, M.: *Legal Medicine and Toxicology*, New York, D. Appleton-Century Company, Inc., 1940.

[2] Gettler, A. O.: Critical Study of Methods for the Detection of Methyl Alcohol, J. Biol. Chem. **42:** 311, 1920. Autenrieth, W.: Laboratory Manual for the Detection of Poisons and Powerful Drugs, translated by W. H. Warren, Philadelphia, P. Blakiston's Son & Co., 1928.

Council on Pharmacy and Chemistry

REPORT TO THE COUNCIL

The Council has authorized publication of the following report from the Therapeutic Trials Committee, a standing Committee of the Council on Pharmacy and Chemistry.

Austin Smith, M.D., *Secretary.*

PROGRESS WITHOUT STATISTICS

H. M. C. LUYKX, D.Sc.
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Among the functions of the Therapeutic Trials Committee is the encouragement of critical controlled clinical trials of new agents in the diagnosis, prevention and treatment of disease. Such trials must be pursued by recognized scientific methods, many of which involve the application of simple statistical procedures. Furthermore, data derived from such clinical trials frequently can best be assembled and presented with the aid of statistical technics. Hence, clinical investigators and readers of scientific journals should be familiar with the uses and limitations of the commonly used statistical methods and the interpretation which may safely be drawn from the results of the statistical treatment of data.

The Committee requested Dr. H. M. C. Luykx of New York University to prepare a general article on this subject. The Committee believes that the methodology of statistics is best left to the statistician but that the need for and interpretation of statistical procedures should be generally appreciated by the medical and allied professions. It is hoped that the following discussion, prepared by Dr. Luykx, will encourage investigators to seek the aid of statisticians in the design of experiments and the analysis of data and will enable those who read scientific periodicals to be more critical in their acceptance of the conclusions of the authors of articles.

Walton Van Winkle Jr., M.D., *Secretary.*

There was a time when medicine could not be dignified by the name of science. As factual knowledge has replaced unproved hypotheses, research has extended into the development of theory based on more and more exact—and more exacting—observations. Repeated observations have produced evidence not obtainable with a single measurement. From this has grown the use of numerical data as a powerful tool in demonstrating relationships not otherwise evident.

Numerical data have played such a large part in modern research that it is no great surprise to find them abused and endowed with an exaggerated importance, sometimes out of all proportion with their true worth. It is human nature to imbue the printed word with a sanctity far beyond that of a personal observation. In the same way, a numerical statement is often credited with a value not given to a verbal phrase, even though there may be no justification for such distinction. In the ordinary mind a numerical observation implies objectivity; it implies accuracy; it implies scientific value. If such implication is not intended, care should be taken to make this clear. If the implication is to be justified, the observer or analyst must be equipped to observe phenomena objectively and accurately, to present his observations clearly and to interpret his findings correctly.

OBSERVATION

Although the present remarks will refer chiefly to quantitative observations of various kinds, it is not to be assumed that they will concern the research worker only, and not the clinician. Clinical observations may be purely qualitative in nature, but their full value is seldom realized when taken singly. It is in comparison with, or in combination with, other similar observations that the solution of a particular problem may lie. For example, to observe the presence or absence of a rash may be of clinical significance. But, as the clinician well knows, the frequency with which a similar type of rash occurs, in the same or in other circumstances, forms the basis of knowledge concerning a given disease which a single observation does not provide. The important factor then is the definition by which similarity is established: the color of the rash, its anatomic distribution and its duration. Similarity and dissimilarity are the essence of classification, and the value of any classification or categorization is determined strictly by the adequacy and accuracy of the original observations.

It can be noted from the present literature that an ever increasing proportion of the studies on medical problems depends on quantitative data. When preliminary exploration has been completed, in any study of this kind the first step—which traditionally receives inadequate attention—is to plan, on the basis of (1) the specific questions to be answered, (2) the type and source of information available, (3) the manner in which observations can be made and recorded and (4) the type of presentation best suited to the problem—tables, graphs, averages, percentages and the like.

The matter of deciding on the specific questions to be answered may well be emphasized. There have been many instances in which an accumulation of data turned out to be relatively useless, because it had a bearing on a general subject but was not designed to answer a question which was formulated after the study was well under way. An example of this is a study in which 43 patients with rheumatoid arthritis received a given form of therapy, and the course of the disease was carefully observed in each instance. The treatment being by no means 100 per cent effective, it was logical to compare results with those reported from other studies. A proper comparison, however, was not possible, because this was not contemplated at the time the study was set up and no attempt was made to have comparable groups receiving different forms of therapy.

Although the questions to be answered will indicate the type of observations which ought to be made, it is the source of the data which will determine the observations which can be made. A laboratory problem may provide records consisting mainly of readings on various instruments, titration values, counts of animals and numbers of cells. In a survey of patients or cases, the observations are described by physicians, by patients themselves and so on. The objectivity of such observations varies over a wide range, and their adequacy must again be related to the questions to be answered. It should not be necessary to point out that such matters should be considered before a project is initiated. There is a wide discrepancy between what should be and what is.

Surveys and Samples.—In making a survey, the object is usually to accumulate information from which some sort of generalization can be made. The generalization will apply to a population larger than that from which the factual data have been gathered. Inherently, therefore, the data being studied constitute a sample of a hypothetic group technically called a "universe."

Samples can be selected with a view to adequacy in answering proposed questions. This again is a step which should be performed before a definitive study is begun. As nearly as possible, samples must be representative of the "universe," and they must be comparable in all respects other than the particular points under consideration. For instance, in order to compare the incidence of skin infections among diabetic persons with that among nondiabetic persons, it is of no use to observe hospital and office patients in the first group and all patients of private physicians in the second group. Not only is there likely to be a difference in general resistance to infection in the two groups, but one should remember that a hospital record will cover only short stated periods in a person's lifetime, whereas a physician's record may cover the patient's complete adult life, although perhaps in a less objective way. There is record of a study in which exactly this point was overlooked, and the suspicion that the incidence among the hospitalized diabetic group was artificially low for this reason is justified.[1]

Another example is an investigation to determine the disability caused by seasickness among amphibious troops and the effects of certain proposed remedies. The occupants of one boat were given a medicament, by way of prophylaxis, and, in order to equalize psychologic effects, those of another boat received a placebo. It was impossible to insure, however, that conditions in both boats would be the same, with respect to violence of motion, odors, morale, discipline and the like, each of which is conceivably a factor in motion sickness. Improvement in the comparability of samples was achieved by administration of both the remedy and the placebo in each of two boats (with due regard for the many other factors pertaining to this study which need not be described here).

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[1] Williams, J. R.: Does Diabetes Mellitus Predispose the Patient to the Pyogenic Skin Infections? J. A. M. A. **118:** 1357 (April 18) 1942.

Often there is no opportunity to select samples for comparability, in which event there are technics for taking into account certain points of noncomparability in interpretation of the results of a study. For example, in the comparative study of the mortality rate in two groups of premature infants, in group A 25.8 per cent died and in group B 36.4 per cent died, a mortality rate in B 40 per cent higher than in A. Investigation showed, however, that group B included a much greater proportion of infants weighing less than 1.5 Kg. than did group A. Weight is accepted as a measure of "extent of prematurity," and hence is related to the chances of an infant's dying. Calculation of rates adjusted for differences in weight distribution in the two groups revealed that adjusted mortality rates were 28.9 per cent and 28.2 per cent, respectively—identical to all intents and purposes.

Nothing has been said so far of the adequacy of samples with respect to size. This is related to the theory of probability and concerns the numbers involved, rather than the specific properties of the phenomena making up those numbers. Mastery of a mathematic technic, sometimes simple and sometimes not so simple, is all that is needed to handle this aspect of sampling and will be discussed further under "Significance Tests." The adequacy and comparability of samples in the sense referred to herein is much the more troublesome problem, and its proper consideration must be based on clinical judgment, scientific acumen, experience and plain common sense.

Measurements.—The type of observation to be made and the manner of recording are important factors in planning a survey or research problem. The use to be made of a figure determines the accuracy with which it must be observed. For example, to study the distribution of weights of school children, a reading to the nearest kilogram should be sufficiently accurate. To observe diurnal variation, in relation to certain physiologic changes, would require observation to the nearest gram or 10 Gm. unit. In general, an observation of greater accuracy is more costly, requiring more time and sometimes more expensive instruments. Accuracy beyond that which can be of conceivable use is therefore to be avoided. Caution, on the other hand, must be exercised against demanding for each measurement merely that percentage accuracy which is to be expected in the final result. If each item in the distribution depends on more than one measurement, the errors may act cumulatively instead of tending to cancel each other out, thus multiplying uncertain factors.

In recording observations, there are rules to be followed which may be common enough to the engineer or scientist but which are unfamiliar to many a clinician. For instance, 21.0 mm. means a reading of exactly 21 mm. to the nearest 0.1 mm.; 21.00 mm. is the same value, but the reading is to the nearest 0.01 mm. This is not the place to outline the science of measurements; suffice it to say that one who is to make and record instrument readings should first become familiar with standard technics of reading such instruments and reporting observations.

A warning should be sounded with regard to some common difficulties, however. In grouping numerical observations into a series of class intervals, or categories, it is necessary to have in mind exactly how the original observations were made. Let us suppose that weights of children are recorded to the nearest half-kilogram. A record of 31.5 Kg. would then represent an actual weight, which might be anywhere from 31.25 to 31.75 Kg. A record of 31.0 Kg. would represent a range of actual weights from 30.75 to 31.25 Kg. and so on. Now, if after making such records to the nearest half-kilogram, it is decided to group the observations in whole-kilogram groups, so that 31.0's and 31.5's are combined into a group labeled 31 Kg.; this covers a range of actual weights from 30.75 to 31.75 Kg. If, on the other hand, weights had been recorded to the nearest kilogram originally, 31 Kg. would represent a range of actual weights from 30.5 to 31.5 Kg. Although seemingly not a large discrepancy, if the average weights of two large groups of children, measured in different circumstances, are to be compared, a difference of 0.25 Kg. might be meaningful if real; on the other hand, it might merely be the result of different methods of recording.[2]

In recording age, an important point which is often disregarded is that years of age are commonly—but not universally—recorded as of the preceding birthday, i. e., a person is 17 years old until the day he becomes 18. When recorded to the nearest birthday, however, 17 years covers a range of actual age from 16.5 to 17.5 years (not from 17.0 to 18.0 years). In classifying a series of cases, or persons, according to age, it is highly desirable that conventional groupings be used, because comparisons with other studies by other workers are so commonly made. The briefest review of existing literature will reveal age distributions made in varying ways[3]:

Years	Years	Years	Years
(*a*) 0-4	(*b*) 0-9	(*c*) 0-10	(*d*) 0-10
5-9	10-19	11-20	10-20
10-14	20-29	21-30	20-30
15-24	30-39	31-40	30-40
25-34	40-49	41-50	40-50
35-44	etc.	etc.	etc.
etc.			

It is clear that frequencies distributed in these ways cannot be compared with each other, excepting (*d*) which is presumably the same as (*b*) if (*b*) means to the preceding birthday. Class intervals most commonly used in vital statistics are of type (*a*), sometimes combining 5-14 years into one group or maintaining 5 year intervals throughout. The latter is probably the safest rule to follow, consistent with appropriateness to the particular problem at hand.

Records.—The maintaining of records, in medicine, medical research, public health and hospitals, has become a broad field of specialization. The subject ranges from case histories consisting of several typewritten pages describing a single disease entity to punched cards where a single card contains over a hundred medical, sociologic and other facts. The type of record is determined by the use to be made of it, and again it is clearly essential that all phases of presentation and interpretation of data be considered before beginning their accumulation. Especially where large quantities of observations are to be made, failure to consider a small detail may perhaps double the cost of a survey—indeed it may on occasion even make the results valueless. An axiom which is continually being rediscovered by the researcher is that a record cannot give information on a question which was not in his mind at the time the observation was made.

There is no real substitute for experience and ingenuity in the matter of record keeping. To write a textbook on the subject would serve no purpose, because no rules could be developed to cover all types of problems. Case history forms and birth and death certificates are continually being revised on the basis of experience and new knowledge, with a proper resistance to change for the sake of uniformity. A statistical analyst of necessity becomes a specialist on records, as much as such can exist, and it is now almost inconceivable that a study of any dimensions, in medical science, can be planned without the advice of a statistican.

PRESENTATION

A scientific discussion based on quantitative data usually requires the presentation of numerical observations in one form or another. This may be as a table of original data or of calculated data, such as a frequency distribution, percentages and rates, or as a graph, a series of averages or other calculated factors. Numbers may be thought of as constituting another language, just as German or Greek, which for some readers requires translation into English and for other readers does not, depending on the extent to which the numerical presentation is unusual or is in a conventional form presumably understandable to anyone.

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[2] The question of statistical variability of averages is of no concern at the moment and will be referred to presently.

[3] Feldman, M.: Statistical Study of Life Cycle of 1,154 Cases of Duodenal Ulcer, J. A. M. A. **136**: 736 (March 13) 1948.

The purpose of numerical expression is essentially one of economy. A case fatality rate of 10.4 per cent is a short way of stating that among the observed cases slightly more than 1 out of every 10 terminated fatally, or a manometric pressure of 120 mm. of mercury means that the pressure recorded exceeds that of the atmosphere by a stated amount, in units commonly used to measure such pressures.

In presenting a large mass of numerical data, further economy is achieved by (1) combining these into categories which can be tabulated in a logical sequence, (2) drawing a picture or graph showing the relation of observations or groups of observations to each other in a form more readily understood by the reader or (3) calculating a single number, such as an average erythrocyte count, to represent a series of cases of anemia. Individual preference of the researcher determines to some extent the type of presentation to be used and the form which tables, graphs or parameters (means, medians, standard deviations) shall take. Because of their increasingly common usage, however, conventional methods of presentation should be and are being developed.

It has been stated that the analyst should be allowed wide latitude in his manner of presentation and should not be restricted to constructing tables and graphs in a specified way. This might be satisfactory if the "translation into English" always accompanied such a presentation (as it usually should) and if the verbal explanation were always the central statement of the idea, with the table or graph a mere illustration or embellishment accompanying the story. If the latter were necessarily the case, the usefulness of tables, graphs or parameters would be restricted severely and progress in economy of presentation as well as in ease of understanding would not be possible. It is not suggested that a table or graph can supplant the text of a paper, but where the modern scientific worker must review a tremendous amount of literature in his field it would be a distinct advantage if he could obtain the meaning of a table or graph directly, without having to resort to a considerable amount of reading. (If it is argued that he should be forced to read, rather than rely solely on pictures, this can apply only to inadequate pictures—and the unscientific worker.)

Tables.—It is not proposed to set rigid standards for the construction of tables, particularly because specific standards applicable in all cases have not been, and perhaps cannot be, formulated. There are, however, certain rules which should be observed at all times, but even these cannot be outlined in complete detail here. Certain ones will be discussed, mainly as an illustration of the type of point which should be considered.

Most scientific journals pursue a necessary and desirable policy regarding typography of tables, with respect to arrangement, rulings, use of italics and so on. There are abundant instances, however, of disregard of other conventions which may, in a sense, be more important.

A table should always have a complete title, making it clear what the numbers mean. For example, instead of the heading, "Table 3—Duration," a more appropriate form would be: "Table 3—Number of Cases of Duodenal Ulcer, Distributed According to Duration, by Sex and Period of Onset (War and Prewar)." In a similar way, column headings and titles for lines of the table, should be complete enough to be self explanatory. "Group 1" as a column heading is not satisfactory, unless the title of the table defines "Group 1."[3]

Totals should be labeled and should consistently be placed either (1) at the top of a column and at the left of a row or (2) at the bottom and right. There are specific reasons for adopting one or the other of these two conventions. In (1) it may be inferred that the totals are of greater interest than the breakdown. If totals are given chiefly to assure the reader that the figures balance, (2) is preferred. Consistency, however, is desirable at all times.

In showing a column of percentages it is most important to show that the total equals 100 per cent. Table 1 illustrates the reason. In the two columns headed "Percentage," a glance at the total shows that the right hand column is a distribution of the 514 cases of anemia by age. In the first percentage column the "total" is obviously a weighted average of the five percentages. Without the convenience of the 100.0 per cent, it would be necessary to write the column headings somewhat as follows, to avoid confusion: (1) "The percentage of patients in each age group who were anemic" and (2) "The percentage of the total number of anemia patients falling in each age group." There are almost always two possible ways of calculating a series of percentages, each having its distinctive meaning.

Graphs.—In the same way that a table constitutes an orderly presentation of data, for the purpose of making their meaning more readily understood, a graph is a picture for the purpose of presenting a series of observations in the simplest, clearest manner. This general purpose is served by one or a combination of three objectives: (1) to present a picture, simply as an illustration accompanying a story, (2) to aid in an explanation which would be difficult to follow without a diagram and (3) to demonstrate facts or relationships which would not be evident without a graph. In none of these cases is the graphic presentation an end in itself but a means of demonstrating evidence supporting a stated hypothesis or conclusion.

In the first of these three objectives there is certainly no harm in expression of individuality with regard to the construction of a diagram. The picture should, among other things, be pleasing in order to attract the eye. In the latter two instances, however, the graph becomes the central theme of an exposition, with an explanatory text for the purpose of "translating into English." Hence the development of, and adherence to, certain conventions will result in clearer graphs, more readily understood, and in a decreased necessity for reliance on a laborious explanation.

Table 1.—*Incidence of Anemia in 1,500 Patients Admitted to Boston Floating Hospital* *

Age	Total Number of Patients	Number of Anemic Patients	(1) Percentage Anemia in Each Age Group	(2) Percentage Distribution of Anemic Patients
Under 6 mo..........	237	90	38.0	17.5
6 mo. to 1 yr.........	178	83	46.6	16.2
1 yr..................	240	122	50.8	23.7
2-4 yr................	285	96	33.7	18.7
5 yr. and over........	560	123	22.0	23.9
Total..............	1,500	514	34.3	100.0

* Baty, J. A.: Classification of Anemia in Infants and Children, J. A. M. A. **134**: 1002 (July 19) 1947.

A complete formalization of graphic procedure, covering all possible applications, is clearly not practical. Certain general rules, however, must be followed, and a few of these may be considered as an illustration of the need for establishing conventions of some sort. Just as in connection with tables, a title should always accompany a graph, and it should be complete in describing what the diagram shows, without reference to a text. It is desirable, whenever possible, to present a table of data from which the graph is drawn. An appendix for this purpose offers a practical method of accomplishing this. Simplicity is essential; therefore separate sets of data should appear in a single graph only if they are to be compared with each other directly and not for economy of space.

Of greater importance than the appearance of a graph, however, are some basic principles regarding different types of charts adapted to portraying specific types of data. The use of lines, bars and particular scales are predicated on certain types of data, the relationship of which can be most confusing, to the analyst as well as the reader, if not properly understood. It is unfortunate that reference cannot be made to a specific textbook explaining these principles. To the writer's knowledge, there is no such single source at the present time. Our purpose can be served best in the present limited space by referring to the following examples: illustrating just a few of the comon points of confusion.

Figure 1[4] shows a pair of graphs as actually published recently in a medical journal. The two charts, although similar in appearance, refer to entirely different types of data. This fact is further obscured by the combined title of the figure referring to the two graphs. Figure 2 shows the same observations charted in a more appropriate way and at the same time correcting a common, though serious, error caused by the nonuniform age scale (along the horizontal axis).

In both figures, graph A represents a frequency distribution and graph *B* does not. In a frequency distribution, the total of all the objects observed (necropsies, in this case) is distributed over the scale of the variable (age). Since this scale is described here in nonuniform intervals, it should be drawn to show this, i. e., each year of age should be represented by a given distance on the scale, so that the age span for 4-10 years will be three times as wide as the span for age 2-4 and six times as wide as that for age 1. Constructed with this in mind, the height of each curve in figure 2, graph *A*, at any particular point, indicates the relative frequency with which cases arrive at autopsy at that particular age. This is more informative than indicating the number of necropsies in a given age group, when that age group is not comparable in width with any other age group in the distribution.

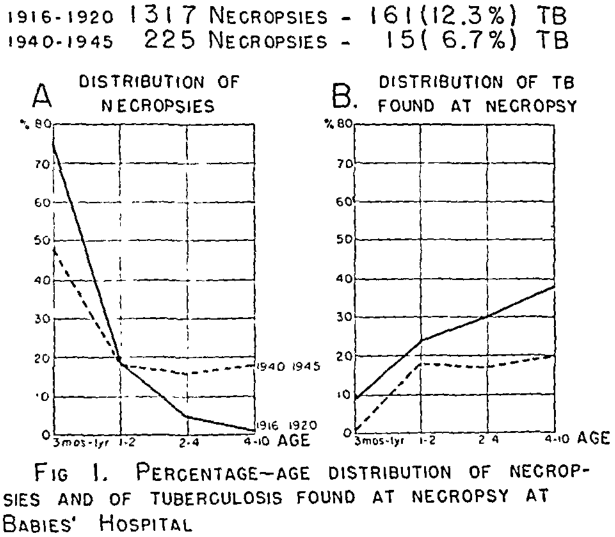

Fig. 1.—Reproduction of a pair of graphs recently published in a medical journal.

That graph *B* (figs. 1 and 2) is not a frequency distribution is revealed by the fact that the total of the percentage figures plotted (for either of the two time periods) is not expected to add to 100 per cent. Each percentage represents a ratio of tuberculosis cases to total autopsies, calculated for a particular age group. To emphasize the different character of these percentages from the distributions in graph *A* it is highly desirable *to use a different form* of graph, as shown. This difference should also be made clear in the titles and scale markings of the graph. Note that the age scale has been made uniform for years, as before.

Parameters.—Parameters, or statistical constants, may be thought of as one step further in the reduction of a mass of quantitative data into a usable form. A single number, such as an average or a regression coefficient, may represent a series of observations for purposes of comparison with the corresponding parameter of another series of observations. Thus a mass of data may be arranged first as a column of numbers in a table, next as a line on a graph and then as a single statistical constant. Each form of presentation is successively more economical with respect to the symbolism used to represent large quantities of observations. But efficiency of expression is accompanied with a corresponding complexity with respect to the inherent character of the symbol. Thus an average red cell count of 5,200,000 per cubic millimeter may represent a large group of subjects. The use which can be made of this number, however, depends on many things not immediately apparent in the expression itself. It depends on the number of subjects included in the sample, the variability of the erythrocyte counts for successive subjects, the possible errors of observation, the definitions surrounding the universe sampled and so on. Consideration of these factors will be referred to presently, since they constitute the basis of problems dealing with interpretation of data. For the present it is necessary to consider briefly what some of the commonest parameters are.

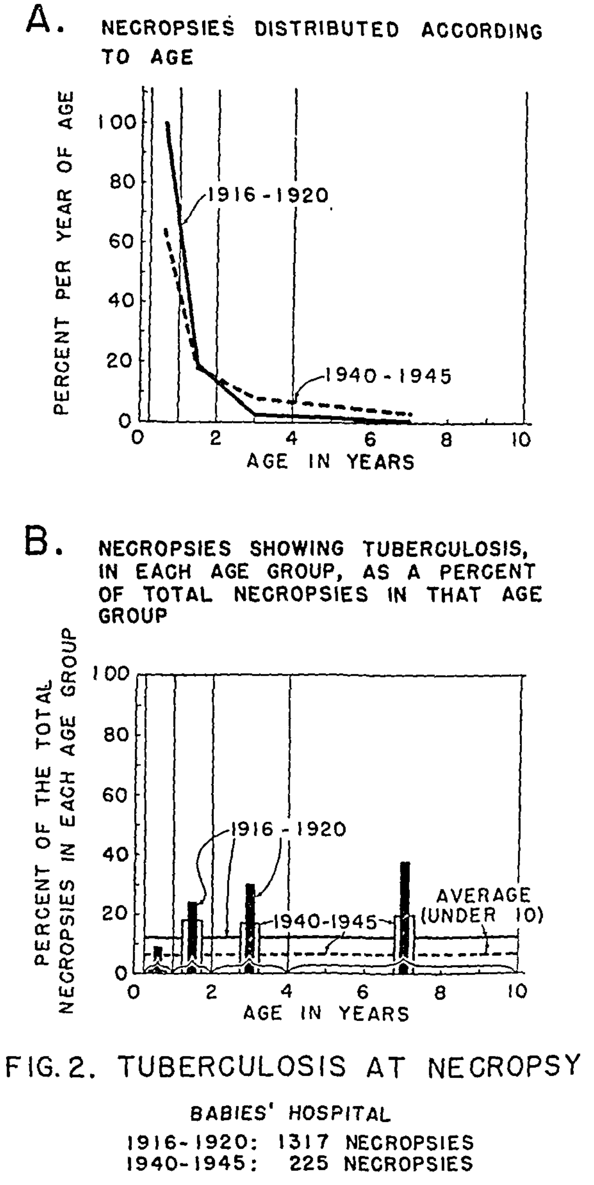

Fig. 2.—Graphs of the same observations as in the graphs in figure 1 charted in a more appropriate way.

Of the many types of constants which can be calculated from a group of numerical observations, two types far surpass any others in the extent to which they are used: (1) constants of central tendency, commonly called averages, and (2) constants of dispersion, or measures of spread of variability. In addition, there are coefficients related to shapes of distributions, parameters derived from analytic equations and so on. Without entering into an extended explanation, it would serve no purpose simply to describe such parameters, and the reader is therefore referred to existing textbooks on elementary statistics for a treatment of the subject. Averages and measures of spread, on the other hand, are so universally used that they cannot be dismissed without further comment.

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[4] Medlar, E. M.: The Incidence of Pathologically Significant Tuberculosis in Routine Necropsies in Private and Public General Hospitals, New York State J. Med. 47: 582 (March 15) 1947.

Averages: An average is a number which represents the middle of a group of observations. Three common types are the arithmetic mean, the median and the mode. There are still others, such as the harmonic mean and the geometric mean, which are seldom encountered in medical work and may be ignored at this time.

The *mean* is the sum of all observations divided by their number. This is what is meant by the word *average* when used in ordinary conversation and is without doubt the commonest and most used parameter of the whole list. The entire theory of variability of measurements, sampling, correlation and the like is based on the use of the mean as a centering constant. The *median* is that number which divides the observations so that an equal number will lie above and below that value. The *mode* is the value which occurs more often than any other in a series of observations. In general, when numbers are symmetrically distributed, these three types of averages have the same value. It is only when observations are bunched closer to one end of their range than the other that a distinction becomes important.

Measures of Spread: Among measures of dispersion there may be as many types as there are among centering constants. Their function is to describe, in terms of the scale of the variable, the extent to which observations are spread up and down that scale. The *range* is a simple and common measure of spread, giving the interval between the lowest and highest observations in a group. Its usefulness is limited, however, because one or both of the extreme values in a series are likely to be unusual or nonrepresentative of the group.

The most important measure of spread is the *standard deviation,* also called the *root-mean-squared-deviation.* It is easily defined algebraically, and it enters into the entire theory of statistical significance more than any other parameter (except perhaps the mean). The algebraic formula[5] for the standard deviation is:

$$\sigma = \sqrt{\frac{\Sigma\,(x - m)^2}{n}}$$

which can be translated to read: the square root of the average of the squared deviations (of each observation from the mean of the group); hence the term root-mean-squared-deviation.

The meaning of the mean and standard deviation can be illustrated by considering table 2. In weighing 1,213 17 year old boys, there would obviously be a variation in weights. A single number representing the group is the mean weight of 137.6 pounds. This is useful for comparison with a mean weight for girls of 119.7 pounds. Although the average of boys is about 18 pounds heavier than the average of girls, one would not expect all boys to be heavier than all girls at this age. The spread of weight of boys is indicated by $\sigma = 20.5$ pounds. The exact relationship of σ to the total spread on the scale of weights depends on the shape of the distribution. In this case (but not in all cases) it is safe to say that the heaviest boys will be between 2 and 3 σ's above the mean, and the lightest between 2 and 3 σ's below the mean. In other words, there are undoubtedly some boys in the group who weigh as much as 180 pounds $(137.6 + 2 \times 20.5 = 178.6)$ and some who weigh as little as 95 pounds $(137.6 - 2 \times 20.5 = 96.6)$.

For girls σ is considerably smaller, which means that the distribution of girls on the scale of weights is not nearly as great as that for boys—these girls were more uniform in weight than the boys. In like manner, there were most likely some girls weighing as much as 145 pounds $(119.7 + 2 \times 12.3 = 144.3)$ and some as little as 95 pounds $(119.7 - 2 \times 12.3 = 95.1)$. Hence it would be no surprise to find small boys and girls (aged 17) of about the same weight, but it would be quite surprising to find a girl, even if well above the average weight for girls, as heavy as the heaviest boy.

The technic of calculating the mean and standard deviation need not be discussed here. This is a matter of the proper use of a calculating machine or a slide rule. Much more important is a correct understanding of the meaning of these parameters. Applications and limitations surrounding their use will be brought out more fully in the following discussion of significance tests and statistical inference.

INTERPRETATION OF RESULTS

The matter of making scientific observations and presenting quantitative data is not new in science. It is only in recent years, however, that medical men in general have realized the need of familiarity with such technics. In the interpretation or evaluation of data, on the other hand, medical researchers are not the only ones faced with problems of analysis for which there is no set pattern. Many applications of the various theories related to probability are currently being developed in industry, finance and engineering, as well as in the biologic sciences. As a consequence, it would be impractical to expect every student of medicine to become an expert in statistical analysis. Each one should, however, have a clear basic understanding of the place where statistical analysis is of value, of the limitations of such analysis and of the philosophic principles on which statistical inference rests.

Statistical Analysis and Significance Tests.—A simple rule of thumb to determine where statistical analysis may play a part is to consider the nature of a single scientific observation related to the question under consideration. If repetition of the observation can only produce a result identical with the first, then there is no statistical problem. For example, in a study of symptoms of manifest human rabies, one of the observations recorded in each case is probably the fact of death. At present this is the only known prognosis for clinical cases, and hence there is no statistical problem involved in the question of fatality resulting from rabies. Or if barometric pressure, at a given time and place, is part of a record, that observation (for that time and place) would show no change on repetition and is hence not subject to statistical analysis.

TABLE 2.—*Weight of Boys and Girls Aged 17 Years (at Nearest Birthday) in Iowa City (About 1934-1935)**

		Weight in Pounds	
	Number	Mean	σ
Boys	1,213	137.6	20.5
Girls	666	119.7	12.3

* Meredith, H. W.: The Rhythm of Physical Growth (in Males), University of Iowa Studies on Child Welfare, February 1935, vol. 11, no. 3; Boynton, B.: The Physical Growth of Girls, ibid., September 1936, vol. 12, no. 4.

On the other hand, if the study of rabies involves all persons exposed (not only those with manifest symptoms), there is no assurance that the record of the termination will be the same in each case. Or if, instead of barometric pressure one were recording blood pressure, a repeated observation would be likely to show some variation from the first, because of the necessarily crude method of making the observation and the natural instability of this physiologic property in man. In these cases, variability is a characteristic of the observations made. Variation constitutes the essence of a statistical problem, and it is worth noting that quantitative data not exhibiting variation of some sort are a most unusual thing.

Variation may be due to any of a number of factors: biologic variation from object to object; variation from time to time; variation due to the particular measuring instrument used; variation due to operation of the laws of chance, or variation due to inaccuracy on the part of the observer. As a general rule observed variability includes more than one, and sometimes many, of these factors. It is one of the functions of statistical analysis to analyze, or break down variability into its component parts, so that the importance of each in relation to the problem at hand may be judged.

It is axiomatic that a numerical statement has value only in comparison with some other such statement. Most commonly one of the purposes is to formulate a conclusion as to whether or not two numbers are significantly different from each other. Today no competent research worker is ignorant of the fact that two numerical results may actually not be the same but that the difference between them may have no significance statistically. A significant difference is one which is greater than could reasonably be expected as the result of inherent variability of the original observations. It is here that a knowledge of variability, as to its cause and its magnitude, is essential.

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[5] σ = the standard deviation as measure of spread; Σ = "the summation of"; x = any particular observation; m = the mean of the observations; n = the number of observations, or sample size.

In cases where the recorded observation is a qualitative one, such as whether a person exposed to rabies dies or not, variability enters only when a number of subjects is observed. The number or proportion who die is then the factor of interest, and variation in this number or proportion can be due to pure chance alone. The situation is analogous to the tossing of a handful of pennies: if 10 pennies are tossed, 5 may fall heads, but it is also possible to have only 4, 3, 6 or 7 heads in the result. This variability is due strictly to the inability to control the outcome for any 1 penny—or for a given subject exposed to rabies. (Whether "exposure" to rabies resulted in infection is, of course, left an open question; else the outcome might not be in doubt.) The possible magnitude of the variation due to chance alone can be calculated by a simple application of the theory of probability. All that needs to be known is the number of subjects in the sample observed and the probability of death (case fatality rate) for such subjects determined with a reasonable amount of certainty. The formula[6]

$$\sigma = \sqrt{np(1-p)}$$

provides a value for the standard deviation as a measure of spread to be expected on the scale representing all possible results and is analogous to the σ referred to earlier in discussing parameters.

In the case of a series of numerical observations, such as systolic pressures for a group of school children, it is the average of the group which is of interest. This average will have a variability the origin of which is a little more difficult to define. If the readings have a basic inaccuracy, a repeated set of observations may vary from the first set, with a resulting different average. Readings made by a different observer may result in still a different average. A different set of school children, identical with the first set in all general respects, will again produce a different mean systolic pressure. The average calculated for a given series of observations, therefore, has an inherent "instability," or variability. The magnitude of this variability is again most easily described by a standard deviation. In this case it is called the standard error of the mean and is given by the formula[7]

$$\sigma_m = \frac{\sigma}{\sqrt{n-1}}$$

where σ is the identical value described in discussing parameters.

A *significance test* in general consists of determining whether a given difference (standard, or root-mean-squared-deviation) is large or not, in relation to the variability inherent in the observations made. The difference may be between an observed proportion and an expected proportion (4 pennies out of 10 falling heads as compared with an expected 5 out of 10); between two observed proportions (the proportion of persons exposed to rabies dying after treatment with Pasteur's original method compared with those receiving Semple's vaccine); between an average calculated from a set of observations and an accepted normal value (the mean blood pressure for a group of school children compared with a so-called "normal"), or between two averages derived from two sets of observations (the mean blood pressure for boys compared with that for girls in the same grade). Whether or not this difference is significant is determined by the magnitude of differences which could easily arise because of "chance," or uncontrolled variability, alone. The observed difference is commonly designated as x and the magnitude of differences to be expected due to normal variation is measured by σ_x, which can be calculated by the formula:

$$\sigma_x = \sqrt{\sigma_1^2 + \sigma_2^2}$$

where σ_1 and σ_2 are the measures of variability (standard errors of the mean) for the two samples in question, as described previously. (This formula assumes that the samples are independent, i. e., uncorrelated. If that assumption is not valid, the formula will not suffice.)

The ratio x/σ_x will generally be less than 2.5 when the difference is due to random factors, or "chance," only. Therefore, if x/σ_x is less than 2.5 one must conclude that the observed difference could have been the result of random sampling alone, and one has no evidence that it was due to whatever factor is under consideration, e. g., the type of vaccine used, or the sex of the school children.

The x/σ test has been referred to here in the most general terms, and it is not my purpose to explain the technic of its calculation. Other names commonly connected with the same procedure are "t test," "relative deviate" and "critical ratio"; these sometimes have a slightly modified meaning. Other tests of significance are the χ^2 (chi-squared) test, the point binomial, analysis of variance and so on. Representing different technics, applicable in prescribed circumstances, they are nevertheless based on the same general principle, viz., that of comparing observed differences with expected variability due to chance or other uncontrolled factors.

TABLE 3.—*The Probability (P) of Obtaining a Difference as Great as or Greater Than x, Due to "Chance" Alone, When x/σ Is as Given*

$\frac{x}{\sigma}$	P	$\frac{x}{\sigma}$	P	$\frac{x}{\sigma}$	P
0.0	1.000	2.0	0.046	4.0	0.00,006
		2.1	0.036		
1.0	0.317	2.2	0.028	5.0	0.00,000,06
		2.3	0.021		
1.5	0.134	2.4	0.016	6.0	0.00,000,000,2
		2.5	0.012		
1.9	0.057	2.6	0.009	∞	
		2.7	0.007		
		2.8	0.005		
		2.9	0.004		
		3.0	0.003		

Of greatest importance for consideration at the present time are not the specific technics of the different tests, nor the exact type of problem to be solved by each, but the limitations surrounding significance tests in general and the underlying principles of statistical inference.

Statistical Inference and the Limitations of Significance Tests.—Ideally, one might wish to use statistical data to prove the value of a given form of therapy or to prove the relationship between two characteristics, such as body weight and basal metabolic rate. Proof, in the strictest sense however, is not obtainable from data merely by virtue of their being in numerical form. Indeed, because of the very character of statistical observations, their inherent variability and their strict limitations in application to the problem at hand, they can do no more than lend support, or fail to lend support, to a given hypothesis arrived at on purely logical grounds. As evidence, they can be strong or weak or in-between. The strength or weakness of such evidence is described by *confidence levels,* which in turn can be given in terms of a percentage scale: 100 per cent confidence is equal to certainty; 50 per cent confidence means equal likelihood that the hypothesis is actually correct or that the hypothesis appears to be supported by the evidence purely as a result of random variability. Obviously, a relatively high degree of confidence must be achieved—95 or 99 per cent—to provide evidence which actually does support the hypothesis in question.

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6. σ = the standard deviation of the probability distribution; n = the number of objects in the sample, or sample size; p = the probability of the event in question occurring (expressed as a fraction, the number of positive occurrences divided by the total of positive and negative occurrences).

7. σ_m = the standard error of the mean; σ = the standard deviation of the observed distribution; n = the number of subjects observed, or sample size.

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This percentage scale to describe the level of confidence may be understood more readily by considering the complementary scale, which then represents "the chances of being wrong." Certainty means there is 0 chance of being wrong, and a reasonably high level of confidence is defined as 1 per cent or 5 per cent chance of being wrong. The latter percentage is now analogous to (sometimes, though not necessarily, identical with) the *probability* of obtaining the observed results due to random variation, or "chance," alone. This probability value, commonly designated by the letter P, is the accepted criterion for determining signifiicance in practically all significance tests. In the case of the x/σ test, the theory of probability, with its relation to the "normal probability curve," gives specified P values for each x/σ value, as shown in table 3.

It was mentioned earlier that when a difference (x) is actually due to nothing but chance, x/σ is not likely to exceed 2.5. From table 3 it can be seen that the probability (P) of its exceeding 2.5 is about 0.01, or 1 chance in 100, which is considered unusual or unlikely. From this it is argued that when x/σ is greater than 2.5, the cause of the observed difference (x) must have been something other than chance. The conclusion is justified on the grounds that, as the probabilities indicate, one would be wrong only once in a 100 such decisions, which is equivalent to 99 per cent confidence. If 95 per cent confidence is sufficient, that means one can risk being wrong 5 per cent of the time, and for $P = .05$, one sees that x/σ is about 2.0, which for some purposes is considered to be a satisfactory minimum for the significance ratio. On the other hand, it is also possible that confidence equal to near certainty is required. This is represented by a value of P approaching 0 corresponding to $x/\sigma = 3$, 4, or a greater value. It may be noted that $P = 0$ only when variability of observations is no longer a factor, and it will be recalled that in the original premise this did not constitute a statistical problem. Hence the assertion that, when there is a variability of any kind in the original observations, proof positive is not possible, because 100 per cent certainty, corresponding to $P = 0$, is never reached.

For an example, let us refer again to table 2, showing mean weights of boys and girls. The difference between the mean is

$$x = 137.6 - 119.7 = 17.9 \text{ pounds}$$

σ_x is given by the formula $\sigma_x = \sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2}$

where σ_{m_1} and σ_{m_2} are the standard errors of each of the means, calculated as follows:

$$\sigma_m = \frac{\sigma}{\sqrt{n-1}}$$

Hence $\sigma_{m_1} = \dfrac{20.5}{\sqrt{1212}} = 0\ 589$ pound

and $\sigma_{m_2} = \dfrac{12.3}{\sqrt{665}} = 0\ 477$ pound

$$\sigma_x = \sqrt{(.589)^2 + (.477)^2} = 0.758 \text{ pound}$$

$$\frac{x}{\sigma_x} = \frac{17.9}{.758} = 23.6$$

This is an exceedingly large value of x/σ, as was to be expected. There is no doubt that the difference in weight between boys and girls aged 17 years is greater than could possibly be accounted for by random variation in weight measurements. The value of P associated with $x/\sigma = 23.6$ is so close to 0 that the degree of certainty attained is to all intents and purposes perfect. In order to understand the implications of a significance test, however, it must be remembered that the conclusion is based on a mathematic procedure and that in theory there is a chance (1 in many, many billions perhaps) of obtaining such a difference as the result of random variations—and hence of being wrong in our conclusion.

In the case of weights of boys and girls, the lack of doubt as to the significance of the difference is based largely on the knowledge of physiology and growth as related to sex, and a significance test was hardly necessary. In other instances, however, empiric knowledge may not be at hand. Statistical significance then carries the burden of evidence, and its limitations must be understood.

When a difference is not significant, it can only mean that chance variations could have produced a difference as large as the one observed. There is nothing to indicate that chance alone did produce that difference. To say that a nonsignificant difference is not real is therefore a distinct error.

The preceding example is a case of a highly significant difference, with the conclusion that the evidence is good in supporting the hypothesis that boys are heavier than girls. In the case where an observed difference turns out to be not significant, the conclusions to be drawn are more complex, and it is here that errors in interpretation are commonly made. An example will provide the best means of explaining the inferences and limitations pertaining to such a situation.

Let us suppose that the mean systolic pressure for a group of Negro soldiers is to be compared with the mean systolic pressure for a comparable group of white soldiers. The two means are not identical, but a significance test shows that the difference between them is no larger than could easily have occurred as the result of random variability only. Clearly one then has no evidence that there is any difference between Negroes and white persons in this respect. Can one now say, "There is no difference between the two races as regards systolic pressure?" One most decidedly cannot. The significance test itself is-based on a "null hypothesis," which states the question in this form: "On the hypothesis that there is no difference between mean systolic pressure in white persons and in Negroes, could a difference as large as the one observed be the result of random variation?" Having answered this question in the affirmative, there is no further evidence whatsoever in these data, that the two races have essentially the same blood pressure.

The significance test is limited strictly to the mathematic behavior of numbers—the numbers in this case being certain sphygmomanometer readings. The lack of evidence of an association between race and blood pressure is not evidence of lack of such an association. On this point there must be no doubt.

COMMENT

Within the space of these pages it has been possible to do no more than touch on one type of significance test, as an example of the purpose and limitations of statistical inference. To cover the multitude of problems and applications in this field would constitute a short course in probability and statistical analysis. The research worker in medicine, as well as in other sciences, can hardly be considered competent without some such training. Even so, more often than not the services of an expert in this field are essential, and it is our aim to point out the need rather than to explain the function of such application.

Whenever quantitative data play a part in a piece of research, the experimental design as well as the statistical analysis cannot receive too much emphasis, before, during and on completion of the project. Adequate recording and clear presentation, to achieve the maximum results from any piece of research, are equally important. But the research analyst cannot rest with the mere observation of phenomena and their presentation. He inevitably assumes a certain responsibility for the interpretations to be placed on his findings and the use to be made of his contribution to science.

Most important of all, however, is for the reader of medical and scientific literature, the medical "common man," to have an appreciation of the need for, and the purposes of, proper presentation and analysis. The student of medicine must have some knowledge of technics of handling quantitative data (1) in order to understand a correct presentation and (2) in order to form a judgment (or at least entertain a healthy suspicion) as to whether a given exposition or analysis is adequate or not.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

Edited by
MORRIS FISHBEIN, M.D.
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Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, SEPTEMBER 17, 1949

THE "VERTICAL" TRANSMISSION OF CANCER

The suggestion that cancer is caused by viruses transmitted "vertically" from one generation to another is made by L. Gross[1] of the Veterans Administration Hospital, New York. Mammary carcinoma of mice is caused by a filterable agent which is transmitted through the milk of nursing females.[2] This agent is destroyed by heating to 61 C. for thirty minutes[3] and can be neutralized by a specific immune serum.[4] The development of mammary carcinoma in mice can be prevented by simply isolating newly born animals from their potentially cancerous mothers and transferring them for nursing to mice whose milk is free from the tumor agent. The newly born mice become infected by the milk of their mothers; they remain in perfect health, however, through early adult life, mammary carcinoma developing at 1 to 1½ years of age. In the meantime, they may transfer the tumor agent to their own offspring and thus assure the continuation of the disease. In other words, breast cancer of mice is claimed to be a communicable disease.

The natural transmission of mammary carcinoma in mice is different from that in the common communicable diseases. A mouse carrying the tumor agent can be placed in the same cage with healthy, susceptible mice; yet transmission of the disease will not result. The same mouse, however, will transmit the tumor agent through milk to her own daughters and through these to granddaughters, great granddaughters, and onward. This pattern of transmission may be designated a "vertical epidemic."[1] The pattern of "vertical" transmission of pathogenic agents is not limited to the virus of mammary carcinoma of the mouse, but is also followed by many other parasites, particularly in plants and in insects.

Gross[1] assumes that breast cancer in other mammals, including man, may be caused by agents similar to that responsible for mammary carcinoma of the mouse. If this is true, women with a history of cancer should not nurse their babies; artificial feeding should be substituted. This simple measure may interrupt the flow of the virus and eradicate a strain of human breast cancer within one generation. Gross advances the following working hypothesis: There may exist a group of transmissible agents causing different kinds of tumors. A most striking feature of these agents would be their faculty to pass "vertically" from one host to another of successive generations, through the ovum, or sperm, or through the mother's milk. During a long asymptomatic phase the infected hosts would appear perfect in health, but harbor the virus and transmit it to succeeding generations. The activation of the hitherto latent agent in the transmitting host would then occasionally follow.

Once activated, the tumor virus would cause at the site of activation a rapid growth of cells with infiltration of the surrounding tissue, and later spread through the lymphatics, and possibly through the blood. In many instances, however, the tumor virus might not become activated; there would be no symptoms of tumors in such hosts even though they might transmit the virus; the virus would appear to have "skipped" an intermediary host. Since the virus would be transmitted only from one host to another of successive generations, each "skipping" of an intermediate host would result in the "skipping" of an entire generation; the "skipping" of two successive hosts would result in "skipping" of two generations. Tracing the course of the virus may become extremely difficult. Accurate and complete records covering many successive generations may be needed for this purpose. Gross assumes that, should such records become available, each case of human cancer could then be traced to another case of cancer in one of the patient's ancestors.

The "vertical epidemic" theory differs from other current theories on the virus origin of cancer by the introduction of the concept of a "vertical"—i. e. generation to generation—transmission of the virus and by the assumption that the virus may be dormant and transmissible as well as active and tumor forming. This hypothesis is not perfect, however. Why do tumors develop in animals submitted to prolonged irradiation with roentgen rays or radium? Why can tumors be produced almost at will, at least in mice, by the application of many carcinogenic chemicals? Is it possible that all these animals are carriers of an inactive tumor virus which is being activated by the carcinogenic agent? Gross[1] stresses that, in the mouse at least, hormonal stimuli will prompt the development of breast cancer in male mice otherwise free from cancer only if the mammary carcinoma virus is present in the host.[5] If this is true for other carcinogenic factors the assumption is necessary that the tumor virus or viruses are so widely spread in the animal kingdom that most individuals carry one or another of them in their cells without, in most instances, showing any tumors.

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[1] Gross, L.: The "Vertical Epidemic" of Mammary Carcinoma in Mice, Surg., Gynec. & Obst. **88**: 295, 1949.

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The "vertical epidemic" theory of cancer merits careful consideration because it raises the question of preventing breast cancer in women by the artificial feeding of infants born to mothers with a family history of cancer.

EPIDEMIC PLEURODYNIA

Finsen in 1856 reported outbreaks of an epidemic disease in Iceland characterized by muscular rheumatism of the chest or "pleurodynia." Daae and Homann in 1872 reported similar attacks in Norway and provided the first careful description. In 1930, Sylvest studied the disease on the Danish island of Bornholm, where the disease appeared to be endemic. The disease was made reportable in Denmark, and some 10,000 cases were reported in the next two years. Since then many epidemics have been described in Scandinavian countries and in the British Isles. The disease was first reported in the United States in 1888 by Dabney, who gave an account of an epidemic in Virginia. The syndrome has been variously designated as Bornholm disease, epidemic muscular rheumatism, acute benign dry pleurisy, epidemic pleuritic pain, Balme disease and "devil's grip." Tasker Howard and associates[1] reported an outbreak of the disease with 166 cases in Brooklyn in the summer of 1942. Scadding[2] described an acute febrile illness characterized by symptoms and signs suggesting dry basal and diaphragmatic pleurisy in a British military hospital in the Suez Canal. The most recent report is that of Finn and co-workers[3] on an outbreak in Brookline, Mass., during the late summer and early fall of 1947. One hundred and fourteen patients were admitted to the Boston City Hospital. The symptoms observed were much like those reported in the previous outbreaks. The clinical picture was characterized by an abrupt onset of a severe pain at the costal margins, the abdomen or the shoulder. The typical severe pleuritic type of pain was described variously as "smothering," "stabbing," "knifelike" and "like a vise around the lower ribs." The pain was aggravated by deep breathing, yawning, coughing and body movements. Pleuritic friction rub, cutaneous hyperesthesia, abdominal tenderness and rigidity were less frequently observed. The duration of the pain was from two days to seven days. Slight rise in leukocytes present during the first two or three days was invariably followed by definite leukopenia. Spinal fluid in patients with symptoms of central nervous system involvement frequently showed increased albumin content and definite pleocytosis. Roentgenologic studies revealed normal lung fields and freely movable diaphragm. Tasker Howard,[1] McConnell[4] and Gsell[5] reported symptoms of meningoencephalitis in some of their patients. Other complications observed were orchitis and, rarely, pericarditis.

These outbreaks were, no doubt, due to infection, as suggested by their occurrence in epidemics with a similar febrile course and by the evidence of direct case to case transmission. The failure to demonstrate any constantly present bacterial agent and the occurrence in some cases of benign serous meningitis or meningoencephalitis and orchitis suggest that infection is caused by a virus. Finn and co-workers[3] state that blood cultures taken at various times during the first ten days of the illness did not contain pathogens. Cultures from the throat did not reveal a predominant organism. Studies for the presence of heterophile antibodies were likewise negative. Intra-amniotic inoculations on eggs with throat washings, cerebrospinal fluid and rectal swabs collected from typical patients during the acute phase of illness gave negative results as to the presence of a virus.

The treatment, largely symptomatic, included rest in bed and the use of analgesics. Penicillin and streptomycin appeared to be without special value.

HIATUS HERNIA

Roentgenologic studies during two decades have demonstrated that hernia of the esophageal hiatus, once considered rare, is not infrequent. Brick[1] notes that there were 308 hiatus hernias among 3,448 patients subjected to routine barium study of the upper part of the gastrointestinal tract during the years 1945 and 1946 in the Boston City Hospital. Ritvo[2] pointed out in 1930 that the roentgenologic examination is the only means of arriving at the diagnosis of hiatus hernia, but that the patient must be studied in the prone, supine and oblique positions, since hiatus hernia is only rarely seen with the patient erect. Ritvo[2] reported 60 cases of hiatus hernia, all diagnosed during routine roentgenologic examination of the stomach with the opaque meal. These occurred during a period in which about 8,000 cases of gastrointestinal disease were studied roentgenologically. According to Schnepp[3] diaphragmatic hernia was noted in 0.02 to 8 per cent of consecutive routine gastrointestinal roentgenologic examinations by various observers. Kirklin and Hodgson[4] reported 306 instances of hiatus hernia diagnosed roentgenologically at the Mayo Clinic in one year. Esophageal hernia was the most common type of diaphragmatic hernia. Among these 306 cases, 31 were of "short" esophagus type and an additional 51 of shortened esophagus.

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[5] Gsell, O.: Meningitis Myalgica: Meningitis serosa bei Myalgia epidemica, Schweiz. med. Wchnschr. **79:** 241-244 (March 19) 1949.

[1] Brick, I. B.: Incidence of Hiatus Hernia and Associated Lesions Diagnosed by Roentgen Ray, Arch. Surg. **58:** 419-427 (April) 1949.

[2] Ritvo, M.: Hernia of the Stomach Through the Esophageal Orifice of the Diaphragm, J. A. M. A. **94:** 15-21 (Jan. 4) 1930.

The etiologic factors which contribute to the development of hiatus hernia are congenital defects in the diaphragm, age, sex, obesity and pregnancy. The majority of the cases are seen in patients past 40 years of age, with the greatest frequency between 60 and 80 years. The condition is almost twice as frequent in women as in men and is most frequent in women who have borne children. Obesity appears to be an important predisposing factor.

The symptoms, according to Kirklin and Hodgson,[4] depend on three factors: (1) the mechanical interference with herniated viscera; (2) interference with function of the diaphragm, and (3) the amount of increased pressure within the thorax. The most frequent symptom is substernal pain. Other symptoms are heartburn, nausea, vomiting, regurgitation and constipation. The symptoms frequently are indefinite and mild, and of years' duration. Bleeding, which occurs in a certain number of cases, is due to erosion and ulceration of gastric mucosa within the hernia. The erosion and ulceration are due to chronic or recurrent venous congestion caused by pressure exerted by the margins of hernia on the vascular supply. Radloff and King[5] observed 50 cases of esophageal hernia at the Mason Clinic during the period from 1944 to 1946. They stress particularly the frequent association of other pathologic conditions with hiatus hernia. In their material only 30 per cent had symptoms which could be attributed directly to the hernia. In 68 per cent, concomitant disease was present and was responsible for the symptoms. In Brick's[1] series roentgenologic signs of an associated gastrointestinal lesion were observed in 20 per cent of the cases. The most frequent associated lesion was a duodenal ulcer.

In the series reported by Jankelson and Morein,[6] ulcers of the stomach and duodenum accompanied hiatus hernia in 25 per cent of the cases. In Brick's[1] material there were 31 duodenal ulcers, or an incidence rate of 10 per cent. Among other complications are mentioned esophageal ulcers and an ulcer niche within the herniated portion. Cancer of the esophagus or stomach in combination with a hiatus hernia is unusual. Chronic cholecystitis and cholelithiasis were reported in 14 per cent of cases by Wilkinson, in 15 per cent by Polley and in 17 per cent by Jones.

Hiatus hernia, regardless of its size, may be completely asymptomatic and may be demonstrated only accidentally. Radloff and King[5] stress that most important in the treatment of diaphragmatic hernia are correction of the coexisting disease, securing a reduction in weight and treatment of the underlying emotional factors. Surgical intervention is indicated when the symptoms are found to be due directly to the hernia and are not relieved by conservative measures.

Current Comment

ANNUAL REPORT OF THE PUBLIC HEALTH SERVICE

Ten years ago the Annual Report of the Public Health Service used to be received in the headquarters of the American Medical Association some six months after the end of the fiscal year. On Sept. 6, 1949, the Annual Report of the Federal Security Agency, Public Health Service, for the fiscal year ending June 30, 1948, was received. This report is now fourteen months old; although it contains information of great importance to the nation, much of it is already stale news. Facts mentioned in the report of Q fever studies (page 311) long ago appeared in the newspapers, and some of them have already been modified by later studies. The fact that experimental Q fever vaccine is available for distribution for experimental use should have been given more prompt and wider publicity than this report provides. Announcement now of the amount of spotted fever vaccine distributed from the Rocky Mountain laboratory is misleading, as this laboratory has discontinued distribution of this vaccine. The scope of the work of the U. S. Public Health Service has continually broadened and now embraces many activities that were not even considered ten years ago as suitable work for the Public Health Service. One million dollars was appropriated to demonstrate use of sodium fluoride for prevention of dental decay. Research activities are carried on in the National Heart Institute, the National Dental Research Institute, the National Cancer Institute and the National Mental Health Institute. The new clinical and laboratory research center at Bethesda has $40,000,000 for construction. Our country's share of the expense of the World Health Organization is $1,900,000; we send about 25 persons to Europe for the meetings. The funds appropriated for the Public Health Service have increased to nearly fifteen times the amount appropriated ten years ago. The total appropriations for the fiscal year 1938 were $13,146,980, and for the fiscal year 1948 they were $192,848,100.

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[3] Schnepp, K. H.: Diaphragmatic Hernia: Its Incidence and Treatment, Illinois M. J. 83: 404-411 (June) 1943.

[4] Kirklin, B. R., and Hodgson, J. R.: Roentgenologic Characteristics of Diaphragmatic Hernia, Am. J. Roentgenol. 58: 77-101 (July) 1947.

[5] Radloff, F. F., and King, R. L.: Esophageal Hiatus Hernia, Gastroenterology 9: 249-252 (Sept.) 1947.

[6] Jankelson, I. R., and Morein, S.: Complications of Diaphragmatic Hernia, Rev. Gastroenterol. 7: 134 (March-April) 1940.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 12, 1949.

Brookings Institution Launches Broad Health Survey

The Brookings Institution of Washington has confirmed a report, first published in the Washington Report on the Medical Sciences, that it has launched a comprehensive survey of medical care in the United States. The study, which it is estimated will take about two years, will examine the facts and figures of private medical practice, voluntary prepayment systems, insurance indemnity coverage, hospital facilities, industrial health protection and all other major aspects of the problem. Observations will be published in two volumes, one on availability of services and the other on evaluation, according to present plans.

Funds for Military to Employ Civilian Doctors

Medical department appropriations for Army, Navy and Air Force in 1950 could be used, when necessary, for employment of civilian physicians, dentists and nurses, by provisions of the military appropriations bill in the form in which it has passed the Senate. The authorization was inserted at the request of the Army, which wishes to be allowed to engage civilians in the event its roster of uniformed medical practitioners falls short of needs.

The authorizing amendment, which is expected to be approved by the House, grants funds "for the employment of such additional civilian physicians, dentists and nurses as may be required for the direct care and treatment of patients." Professional personnel so employed would be engaged, graded and compensated on the same basis as in the Veterans Administration.

Congressional Health Study Itinerary Disclosed

The House Interstate and Foreign Commerce Committee has made public the European itinerary of its members, who are spending the middle and latter part of September studying governmental medical care plans in England and on the Continent. Five members embarked on September 3: Representatives Crosser, Beckworth, Ellsworth, Bennett and Gillette. The others were scheduled to leave Washington September 10 by military air transport. Their itinerary gives them five days in the British Isles, three days in Sweden, one day each in Germany and Switzerland, two days in Rome, Italy, and two days in Paris, France. Arrival time in Washington is scheduled for September 26.

Representative Miller Attacks Socialized Medicine

In a twenty minute speech on the House floor August 22, Representative A. L. Miller (R. Neb.) assailed the "agitation in this country for compulsory health insurance which stems from the President and his busy little group of planners who are determined to make the United States a welfare state." He charged that such a program would entail enormous cost, bring about a "political pill mill," reduce professional standards and nullify gains that have been made in improving the nation's health.

Creation of Two New Research Institutes Approved

A National Institute on Rheumatism, Arthritis and Metabolic Diseases and a separate National Institute on Neurological Diseases and Blindness would be established in Public Health Service under provisions of a bill approved August 25 by the Senate Labor Subcommittee on Health Legislation. The measure (S. 1651, as amended) also would give the Surgeon General discretionary authority to set up other special institutes whenever such action is indicated.

Although Dr. Leonard A. Scheele, Surgeon General, had previously testified before Senate and House committees that he was opposed to establishment of more special disease institutes by congressional mandate, the manner in which S. 1651 has been amended makes the bill acceptable to the Public Health Service and the Federal Security Agency.

On August 23, the Senate Labor and Public Welfare Committee favorably reported S. 1706, authorizing admittance into Public Health Service hospitals of certain persons committed by state courts; S. 2227, amending the act of July 18, 1940, on conditions governing admissibility of Virgin Islanders into St. Elizabeths Hospital in Washington, and S. 2228, authorizing disposal of venereal disease rapid treatment facilities by the Public Health Service. Previously the three bills had been approved by the Murray subcommittee on health legislation.

Heart Grants of $8,614,737 Announced

Eighty-five medical schools, hospitals and research institutions in thirty-four states and the District of Columbia are beneficiaries of federal grants aggregating $8,614,737 for research, teaching and construction assistance in the field of heart disease. The awards, announced by Federal Security Administrator Oscar R. Ewing, are exclusive of $1,200,000 allocated in July for continuing heart research projects already under way.

Assistance in construction of laboratory and clinical facilities at twenty-two nonfederal institutions accounts for $5,890,395 of the grants. The next largest amount—$2,053,310—is for one hundred and eighty-nine research projects at sixty-six institutions. The remaining $671,032 will be divided among forty-six medical schools for the purpose of improving instruction in cardiovascular diseases.

Functions of New Federal Medical Unit Defined

Dr. Leonard A. Scheele, Surgeon General, has signed an order establishing and defining the responsibilities of a new unit in the U. S. Public Health Service. It is the Division of Medical and Hospital Resources, a component of the Bureau of Medical Services in the health service. Its creation, according to the Surgeon General's office, is in "recognition of the need for the development and promotion of methods, standards and procedures for the practical provision of medical, hospital and related services in order to assure progress in the preservation of the health of the American people."

The division will conduct research and provide advice on broad questions of national policy in hospital and related care; formulate hospital and related care programs and operational plans; give technical aid to other parts of the U. S. Public Health Service; develop and promote standards and technics for practical provision of hospital and allied services, including training of personnel, specialization and use of facilities; develop guides and consultative services in such specialties as medical-record-keeping, administrative practices and outpatient services, as well as in the broad fields of medicine, surgery, dentistry and nursing, and conduct medical-economic and social-economic studies.

The division will have four branches—medical economics, medical-hospital administration, clinical services and program operations—and a professional reference service.

Progress Made Toward Industrial Health Body

At the conclusion of a meeting in Washington on September 8, Dr. C. M. Peterson, secretary of the Council on Industrial Health of the American Medical Association, announced that encouraging progress has been made toward formation of a permanent conference which would bring cooperative effort to bear on advancement of health and safety in industry. Attending the September 8 meeting at the Hotel Statler were B. B. Lausche, E. H. Robertson and A. L. Kirkpatrick, representing the U. S. Chamber of Commerce; Collins Winston, National Association of Manufacturers; Harry Reed, Congress of Industrial Organizations; Dr. A. J. Lanza, chairman of the Council on Industrial Health; Dr. Raymond Hussey, and Dr. C. M. Peterson. Final organization plans are expected to be completed at the group's next meeting here, probably in October.

Local Public Health Units Bill Passed

Completion of congressional action on legislation to strengthen and expand local public health services through federal support awaits resumption of business by the House September 21. The Senate passed the bill (S. 522) on August 28, substantially in the form in which it was favorably reported two weeks earlier by Senator Lister Hill (Dem., Alabama). One amendment made on the Senate floor prior to passage provides that industrial accident prevention shall not be included among public health services in the meaning and intent of the proposed law.

Modified Bill Introduced on VA Doctors' Salaries

In the midst of public hearings, conducted by the House Veterans Affairs Committee, on legislation to increase salaries of physicians, dentists and nurses in the Veterans Administration's department of medicine and surgery, a substitute bill was introduced for the purpose of incorporating certain technical points suggested by VA. This new measure, H.R. 6022, replaces H.R. 5324. The sponsor is the same, namely, Representative A. Leonard Allen (D., La.).

New Appointments Made to AEC Biology-Medicine Division

Two new appointments to the medical branch of the Biology and Medicine Division, Atomic Energy Commissions, were announced September 1. At the same time an acting chief of the division's biology branch was named.

Dr. Charles Little Dunham and Dr. George A. Hardie have been assigned to the Washington main office of the medical branch. The former was assistant professor of medicine at the University of Chicago in charge of the arthritis clinic and hospital service, while Dr. Hardie formerly was a fellow in the Department of Medicine at Johns Hopkins University.

Appointed acting chief of the biology branch was Dr. Paul B. Pearson, who joined the commission staff earlier this year from Texas Agricultural and Mechanical College, where he was head of the department of biochemistry and nutrition and served as dean of the graduate school. He succeeds Dr. James H. Jensen, whose resignation became effective September 1.

Office of Education Report Cites School Health Services

According to a report issued September 11 by the Office of Education (Federal Security Agency), nearly 5,000,000 children between the ages of 5 and 14 live in counties lacking organized medical service in public elementary schools. Thirty to 49 per cent of the children in ten states live in counties without school health services, and in ten other states at least one half of the children are in a similar situation, according to the report. It also pointed out that during the past year, of a total of 368,000 degrees granted by colleges and universities, only 5,200 were awarded in medicine, 1,700 in dentistry and 3,500 in nursing.

Woman's Auxiliary

CONNECTICUT CHILD HEALTH CONFERENCE

The Woman's Auxiliary to the Connecticut State Medical Society will sponsor a Community Child Health Conference September 21 at the Centinol Hill Hall in Hartford. Co-sponsoring organizations and agencies include the Parent-Teacher Association of Connecticut, the State Department of Health, State Department of Education and the Connecticut State Dental Association. The morning session of the conference will be devoted to discussions on child health needs in Connecticut's communities and the afternoon session to resources available for child health and their effective use in the community. Thomas A. Hendricks, secretary of the Council on Medical Service, American Medical Association, Chicago, will speak on "Community Health Leadership." Attendance at the conference will include representatives from school districts, parent-teacher associations and community service clubs, local health officers and town officials.

Coming Medical Meetings

Annual Conference of State Secretaries and Editors, Chicago, A. M. A. Building, Nov. 3-4. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Hospital Association, Cleveland, Sept. 26-29. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 5-7. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 6-9. Dr. Frederick J. Brady, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Nov. 10-12. Col. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Central Society for Clinical Research, Chicago, Drake Hotel, Nov. 4-5. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 20-23. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver, Executive Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Pensacola, Fla., Oct. 6-7. Dr. Arthur J. Butt Jr., 1101 N. Palafox St., Pensacola, Fla., Secretary.

Indiana State Medical Association, Indianapolis, Sept. 26-29. Mr. Ray E. Smith, 1021 Hume-Mansur Bldg., Indianapolis 4, Executive Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

International College of Surgeons, United States Chapter, Atlantic City, Haddon Hall, Nov. 7-12. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10, Secretary.

Inter-State Post Graduate Medical Association of North America (International Medical Assembly), Philadelphia, Oct. 31-Nov. 3. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 3-6. Dr. W. Merritt Ketchum, 630 Shukert Bldg., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 6-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel and Civic Auditorium, Sept. 21-23. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, St. Louis, Jefferson Hotel, Sept. 28-30. Dr. Harold Swanberg, 209-224 W. C. U. Bldg., Quincy, Ill., Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 17-19. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Nevada State Medical Association, Elko, Sept. 29-Oct. 1. Dr. Roland W. Stahr, 118 California Ave., Reno, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Pacific Association of Railway Surgeons, Sun Valley, Idaho, Challenger Inn, Sept. 23-25. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 26-29. Dr. W. F. Donaldson, 8104 Jenkins Arcade, Pittsburgh 22, Secretary.

Southwestern Medical Association, Albuquerque, New Mexico, Nov. 9-12. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Texas, Secretary.

Southwestern Surgical Congress, Houston, Tex., Shamrock Hotel, Sept 26-28. Dr. C. R. Rountree, 1200 N. Walker St., Oklahoma City, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder and Milwaukee Auditorium, Oct. 3-5. Mr. Charles H. Crownhart, 704 E Gorham St., Madison, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15 Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

GOVERNMENT SERVICES

NAVY

CORRESPONDENCE COURSES

The following correspondence courses are now available for distribution and may be obtained from the Bureau of Medicine and Surgery by qualified personnel on request.

Title of Course	Promotion Units	Retirement Points
Clinical Laboratory Procedures	3	36
Special Clinical Services—General	3	32
Tropical Medicine in the Field	2½	32
Combat and Field Medicine Practice	2½	32

All officers of the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps and Hospital Corps of the Regular Navy and Naval Reserve are eligible to enroll in any one of these courses. Enlisted personnel of the Hospital Corps are eligible to enroll in the course entitled, "Clinical Laboratory Procedures" and "Special Clinical Services—General."

Application for enrollment should be made to the Bureau of Medicine and Surgery via appropriate official channels and may be made either on NavPers-992 (application for enrollment in officer's correspondence courses) or by letter.

INDUSTRIAL MEDICINE

Under the auspices of the commandant, Third Naval District, a one week training course in industrial medicine for reserve medical officers is being offered at the School of Public Health, Columbia University, 600 W. 168th Street, New York City, Sept. 19-24.

Lecturers will be civilian military specialists in the field of industrial medicine. Comdr. L. J. Goldwater (USNR), professor of industrial hygiene, School of Public Health, Columbia University, and Lieut. Comdr. H. Tebrock (USNR) are in charge of this program. A field trip will be included to the Industrial Hygiene Laboratory, at the U. S. Naval Shipyard, Brooklyn.

Six points toward the nondisability retirement plan (Public Law 810) will be credited to each student. Naval Reserve Medical Corps officers may request one week's training duty with pay and allowances, including travel.

NEW REGULAR OFFICERS

Three reserve medical officers on active duty have been appointed to the regular Navy Medical Corps. They are:

Lieut. (jg) Lynn E. Anthony, to Navy Medical Research Unit 4, Naval Training Center, Great Lakes, Ill.

Lieut. (jg) William G. Krech (MC, USN), in a residency in surgery at the Naval Hospital, Chelsea, Mass.

Lieut. (jg) Harold M. Peacock (MC, USN), at the Attack Carrier Air Group 15.

CERTIFIED BY SPECIALTY BOARDS

Capt. M. J. Aston (MC), medical officer in command, Naval Medical School, National Naval Medical Center, Bethesda, Md., and Capt. Otto L. Burton (MC), Executive Office, Naval Hospital, Quantico, Va., have been certified by the American Board of Preventive Medicine and Public Health in the Founders Group. Capt. B. N. Ahl (MC), on duty at the Naval Hospital, Portsmouth, Va., was certified by the American Board of Ophthalmology.

PUBLIC HEALTH SERVICE

WATER POLLUTION CONTROL ADVISORY BOARD

The second meeting of the recently organized Water Pollution Control Advisory Board will be held October 3-4 in Washington, D. C. The board, appointed by the President on February 11, held its organization meeting in May and transmitted its first report to the Surgeon General of the Public Health Service on June 27. Funds were provided recently for carrying out some of the far reaching objectives of the Water Pollution Control Act. The proposed program will be reviewed at the forthcoming meeting, and plans will be made for future meetings in different parts of the country in order to obtain first hand information on water pollution problems. The new board, which brings industry, government and related interests together formally on the federal level for the first time to deal with water pollution problems, is composed of eleven members, of whom six are nongovernment leaders in pollution abatement.

GRANTS FOR RESEARCH PROJECTS

Grants totaling $489,584 to continue the financing of 35 research projects on mental and nervous disorders and grants totaling $2,554,556.00 made for training personnel in psychiatry, neurology, clinical psychology, psychiatric nursing and psychiatric social work have been announced. All grants were on recommendation of the National Advisory Mental Health Council.

Grants to training centers include funds for expanding faculty and teaching facilities and also stipends for 456 graduate students recommended by the schools. These stipends range from $1,200 to $3,600 and will be granted to 115 physicians for advanced training in psychiatry, 150 registered nurses for training in psychiatric nursing, 109 students of schools of social work for special study in psychiatric social work and 82 psychologists for training in clinical psychology.

FURTHER INCREASE IN LIFE EXPECTANCY

Figures compiled by the National Office of Vital Statistics based on the 1947 death rates show a higher life expectancy than in 1946. The average life expectancy for the total population of the United States in 1947 was 66.8 years. White women on the average live longer than any other single group, their average life expectancy at birth being 70.6 years, while the average for men is 65.2. These figures show that the average length of life of the people in the United States is nearly two years above the level reached in the three years just before the war. The expectation of life at birth has steadily increased through the last fifty years largely through control of infectious diseases.

SYMPOSIUM ON BRUCELLOSIS

A symposium on brucellosis will be held Sept. 22-23, 1949, at the National Institutes of Health, Bethesda, Md. All sessions will be in Wilson Hall, Administration Building. The veterinary, public health, clinical, bacteriologic and control aspects of the disease will be discussed. The symposium is sponsored by the Bureau of Animal Industry, the National Research Council and the National Institutes of Health.

PERSONAL

Dr. Eugene W. Green has been assigned as clinical director of the Galveston Hospital to succeed Dr. Robert T. Hewitt, who was transferred to the directorship of the Phoenix (Ariz.) Mental Health Center.

Dr. G. Robert Coatney has been appointed an adviser to the Expert Committee on Malaria of the World Health Organization by Dr. Brock Chisholm, director general of the World Health Organization.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Folsom, James C.	Wilmer
Howe, Eugene H.	Tuskegee
James, Charles L.	Mobile
Lane, Robert E.	Birmingham
McRee, Jean D.	Hartselle
Morgan, James M. Jr	Thomasville
Penton, Robert S. B.	Wetumpka
Rice, John B. McF. Jr	Birmingham
Shugerman, Alwyn A.	Birmingham
Warren, Palmer H.	Jackson
Wright, Thomas W.	*Guntersville*

Arkansas

Henderson Charles T.	Hamburg
Johnston, Thomas G.	*Nashville*
Murphy, Horace R.	Little Rock
Ratcliff, Charles E., III	Little Rock

Indiana

Dassel, P. M.	Hammond
Datzman, R. C.	Otterbein
Forbes, Robert J.	Martinsville
Girod, A. H.	Decatur
Griffith, R. S.	*Greenfield*
Hoffman, R. V. Jr	South Bend
Lancet, R. O.	Terre Haute
Land, R. N.	Richmond
Lasser, Leonard M.	Gary
Lingeman, R. E.	Indianapolis
McIntosh, *Wilbert*	*Cory*
Paul, Eudell G.	Whiting
Riordan, John F.	Whiting
Schlegel, Donald Max	Brazil
Schroeder, Henry R. Jr	Washington
Shafer, R. H.	Alexandria
Spencer, B. A.	Muncie
Stacy, George	Whiting Lake
Stout, F. E.	Muncie
Swihart, H. R.	Elkhart
Tharp, H. R.	Franfalgan
Tilka, E. C.	E. Chicago

California

Anderson, Donald W.	Los Angeles
Ashton, Paul L.	San Francisco
Bedwell, William L.	Los Angeles
Brown, Wendell E.	San Diego
Brugge, Eugene H.	Oakland
Derry, George H.	Wilmington
Fisher, Robert B.	Los Angeles
Friend, William K.	Santa Ana
Jordan, Ernest W.	Pomona
Lieberman, Daniel	San Francisco
McCaskill, Daniel	San Francisco
Rea, Edward L.	Stockton

Colorado

Gladman, Richard J.	Denver
Kelsall, Charles H.	Boulder
Lapan, Joseph	Pueblo
Mabray, Don D.	Sterling

Connecticut

Grody, Marvin H.	Hartford
Hubbard, Richmond C.	Greenwich
Kantor, Thomas G.	Westport
Mack, Daniel E.	Windsor
Shea, Joseph P. Jr	Milford
Tamoney, Harry J.	Hartford
Yudkin, Gerald S.	Woodbridge

Delaware

Annand, John Walter	Wilmington

District of Columbia

Janis, Leo B.	*Washington*
Loggins, James E. Jr	Washington

Florida

Adams, Daniel M.	Panama City
Burns, Edward C. Jr	Lake Wales
Hardin, Henry C. Jr	Plant City
Kafka, Richard M.	Tampa

Georgia

Bedingfield, W. R. Jr	Augusta
Denham, Samuel W. Jr	Atlanta
Fisher, William R.	Macon
Fortney, Austin P.	Hapeville
Fountain, Thomas G.	Butler
Freeman, James C.	Sylvania
Gregory, Hugh H.	Dalton
Huie, Ralph A. Jr	Atlanta
Kirkley, William H.	Fitzgerald
McElreath, Farris T. Jr	Wadley
Reynolds, Roger J.	*Atlanta*
Shinall, Robert P. Jr	Decatur
Watson, Richard P. Jr	Savannah

Illinois

Dwyer, William B.	Chicago
Forman, Irving M.	Chicago
Grossman, Herbert J.	Chicago
Hediger, Edward L.	Pocahontas
Ihen, Menard C.	Golden
Johnson, Robert S.	Chicago
Lee, John M.	Oak Park
Levatin, Bernard I.	Chicago
Linden, Milton	*Chicago*
McLaughlin, Dean E.	Centralia
Monahan, John W.	Chicago
Reed, Frank M.	Chicago
Rubin, Wallace	Chicago
Schmutzler, Walter A.	Staunton
Seed, *John C.*	*Oak Park*
Sherman, Bennett R.	Chicago
Vruno, Michael J.	Chicago
Wilson, Lincoln E.	Tamms

Indiana

Berman, Edward J.	Indianapolis
Carberry, George A.	*Gary*
Donaldson, Frank C.	Lebanon
Dyke, Richard W.	Fort Allen
Kerr, Donald M.	Indianapolis
Rogers, Donald L.	New Ross

Iowa

Grams, LaVerne F.	LeClaire
Haddad, Benjamin F.	Cedar Rapids
Hennessy, Albert V.	Council Bluffs
Klein, Robert F.	Muscatine
Merritt, Floyd B.	Iowa City
Paragas, Modesto R.	Creston
Southwick, Wm. W. Jr	*Marshalltown*
Van Pelt, Meredith A.	Sioux City

Kansas

Brownlee, William E.	Hutchinson
Peterson, Van D. Jr	Overland Park
Richert, Robert C.	Newton

Kentucky

Gabbert, William R.	*Greenville*
Hemmer, John A.	Fort Mitchell
Kelly, James J.	Ludlow
Schell, Merrill W.	Bowling Green
Stansbury, Thomas C. Jr	Louisville

Louisiana

Bernard, Chaille C.	Baton Rouge
Bloch, Ted	New Orleans
Castro, Philip M. Jr	*Plaquemine*
Craig, Rufus H.	Mansfield
Leckert, Edmund L. Jr	New Orleans
Maher, Frederick A. Jr	New Orleans
Mayer, *Frank V.*	New Orleans
Moskowitz, Herbert L.	New Orleans
Muhleisen, John P.	New Orleans
Sewell, Francis A.	Boyce
Taylor, John M. Jr	Ferriday
Tucker, James W.	New Orleans
Young, Robert J.	Abbeville

Maine

Richards, Lee Warren Jr	*Augusta*
Robertson, R. B.	Presque Isle
Vanamee, P.	Cape Elizabeth

Oregon

Banning, Samuel H.	Portland
Blickle, James F.	Cottage Grove
Brinton, Timmy F.	Baker
Carlin, Harry E.	Portland
Corti, George N.	Milwaukee
Earl, William H.	Cottage Grove
Ford, Floyd W.	Portland
Hansen, Vernon D.	Portland
Huestis, Gerald A.	Eugene
Keever, Joe C.	Portland
Neils, Julius K.	*Portland*
Standish, Vernon D.	Albany
Trainer, Joseph B.	Portland
Weinbaum, Jerome A.	Portland

Pennsylvania

Allison, James Henry	Philadelphia
Anderson, N. S.	Philadelphia
Brackney, Edwin L.	Indiantown Gap
Chase, David Wakefield	Erie
Davis, Ezer H.	Barnesboro
Evans, W. G. Jr	West Pittston
Flory, R. H.	Wyncote
Gallagher, James J.	Philadelphia
Holmes, Joel G. Jr	Philadelphia
Katz, Leon	Pittsburgh
Lichtenfels, F. V. Jr	Pitcairn
McCafferty, William H.	Latrobe
McLaughlin, *Randall M.*	*Philadelphia*
Pfeffer, William H.	Philadelphia
Reinsel, R. C.	Reading
Sampson, Martin C.	Philadelphia
Saylor, J. A.	Pottstown
Sherk, Carl Raymond	Palmyra
Stockdale, Robert H.	Tarentum
Temeles, Lawrence	*Pittsburgh*
Thomas, Howard P Jr	Philadelphia
Troyen, H.	Philadelphia
Turon, L. J.	Old Forge
Van Dervort, R. S.	New Kensington

Rhode Island

Houston, Gilbert	West Warwick
Roberts, Wesley F.	Valley Falls
Spencer, *R. S.*	*Mansdale*

South Dakota

Ensberg, Dorence L.	Toronto
Kimmel, John W.	*Elk Point*
Stenberg, Edwin S.	Sioux Falls

South Carolina

Allen, Harry S. Jr	Florence
Bowie, Carroll W.	Starr
McGill, John C.	Clover
Seastrunk, Jesse G.	Columbia
Smith, Warren S.	Williams
White, Edward O.	*Ehrhardt*

Tennessee

Bales, Donald W.	Morristown
Daffin, Sidney E.	Memphis
Davis, James W.	Chattanooga
Douglass, Roy A. Jr	Huntingdon
George, Charles F.	Morristown
Schack, Jerome A.	Chattanooga
Thomas, Allen G.	*Davidson*
Zerfoss, Thomas B. Jr	Nashville

Texas

Blaine, Mose H. Jr	Dallas
Boulden, Cecil F. Jr	Austin
Couch, Ray E.	Grandview
Dick, Delfred L.	McAllen
Eidson, Jack L.	Waco
Gaitz, Charles M.	Houston
Higginbotham, Warren H.	Houston
Norman, Waymon B.	Dallas
Partain, Jack M.	San Antonio
Rittiman, Melrose C.	Orange
Tewell, Howard E. Jr	Edinburg
Webb, Jack L.	Farmersville

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

State Society Moves to New Home.—On August 25 the offices of the Connecticut State Medical Society were moved to the society's new building at 160 St. Ronan Street in New Haven. The new home was made possible by contributions from the society's members and memorial gifts by friends of physicians. The building is a two story, L-shaped brick structure, measuring 66 by 57 feet. The first floor provides a conference room, three offices, kitchen, storage and boiler rooms. The second floor has six offices, a small conference room, a stenographic department and a mailing room. There is a parking lot in the rear of the building. Space is available in the new building for the *Connecticut State Medical Journal* offices, which for many years have been located in Hartford. It is anticipated these will soon be moved to New Haven. The society's building committee was headed by Dr. James D. Gold, Bridgeport.

ILLINOIS

Veterinarians and Health Officers Meeting.—Veterinarians and public health officers of Illinois will meet in joint session at the Abraham Lincoln Hotel, Springfield, November 16-17. Prevention and elimination of diseases of mutual danger to animals and human beings will be discussed.

State Care for Premature Infants.—From 1943 to 1948 a total of 2,532 babies received care in the State of Illinois Department of Health's three centers for the care of premature babies, and of this number 1,977, or 78 per cent, survived. The state department of health in 1943 was instrumental in establishing two centers in downstate Illinois: one at St. John's Hospital, Springfield, and one in St. Francis' Hospital, Peoria. In 1947 the third premature center was opened at Christian Welfare Hospital, East St. Louis; the fourth center began operation at St. Mary's Hospital, Quincy, in December 1948, but it is now temporarily closed for lack of personnel. These centers, when not filled to capacity, will take babies born anywhere in the state. Transportation in incubator ambulances is provided with a nurse in attendance. The state pays hospital expenses if the parents are unable to afford such special care. In 1948 public health nurses made 1,533 visits to mothers of premature infants.

Chicago

The Mayo Lecture.—The Charles H. Mayo Lecture in Surgery will be given October 21 at 2 p. m. in the Archibald Church Library of Northwestern University Medical School by Sir James Learmonth, Edinburgh, Scotland, on "Arteriovenous Communications."

Dr. Hoffman to Direct Mental Hygiene Division.—Dr. Harry R. Hoffman, formerly executive officer of the Illinois Neuropsychiatric Institute for eight years, has been named director of the Chicago Health Department's new Mental Hygiene Division. Establishment of a mental health section was recommended in the recent Chicago-Cook County Health Survey. Dr. Hoffman is on the consulting staff at Norwegian American and Norwegian Deaconess hospitals, chairman of the Illinois Psychiatric Research Council and former director of the Cook County Criminal Court behavior clinic.

Professor Taliaferro Honored.—William H. Taliaferro, Ph.D., chairman, department of bacteriology and parasitology, University of Chicago, has been elected an honorary fellow of the Royal Society of Tropical Medicine and Hygiene of London. During World War II he served on committees related to military medicine, malaria and biologic warfare of the National Research Council and was a civilian investigator on the Committee on Medical Research of the Office of Scientific Research and Development and a consultant to the surgeon general of the U. S. Army on tropical medicine research.

Personals.—Dr. Eugene J. Chesrow, professor of surgery at the Chicago Medical School, has been appointed exchange professor of surgery to the University of Haiti for 1950-1951. The government of the island recently awarded him its Legion of Honor in recognition of his work among the poor in Haiti.——Dr. John F. Pick of the University of Illinois College of Medicine returned recently from Europe where he delivered lectures at the University of Paris and in Prague.——Dr. Paul H. Jordan, assistant professor of psychiatry at the Chicago Medical School and chief neuropsychiatrist at the Veterans Administration Hygiene Clinic, has been appointed director of the State Child Guidance Clinic at Flint, Mich., effective September 1.——Dr. Leon Unger has returned from a trip to Great Britain and Ireland. He addressed the British Medical Association at Harrogate on "Nasal Allergy," the British Association of Allergists at Cardiff, Wales, and the Institute of Microbiology in London on "Bronchial Asthma" and the Association of Hospitals in Oxford on "Migraine."

Medical Society Postgraduate Courses.—The Chicago Medical Society will present a course in cardiorenal and peripheral vascular diseases October 17-22 and one in obstetrics, endocrine-gynecology and sterility October 24-29. All sessions will be held in Thorne Hall, Lake Shore Drive and Superior Street, except one evening session. The last period of each morning and afternoon session will be devoted to round table discussions. Visiting teachers include:

Benjamin M. Baker, Baltimore, Clinical Features of Coronary Artery Disease.
Irving S. Wright, New York, Use and Abuse of Anticoagulants.
George R. Meneely, Nashville, Tenn., Congestive Heart Failure.
Ovid O. Meyer, Madison, Wis., Treatment of Subacute Bacterial Endocarditis.
Alfred Blalock, Baltimore, Surgical Treatment of Congenital Heart Disease.
Robert E. Gross, Boston, Obstruction of the Esophagus or Trachea from Cardiovascular Abnormalities in the Thorax.
Francis D. Murphy, Milwaukee, Hypertensive Diseases with Special Reference to Malignant Hypertension.
John P. Merrill, Boston, Physiologic Basis of Common Diagnostic Aids in Renal Diseases.
Harris B. Shumacker Jr., Indianapolis, Aneurysms and Arteriovenous Fistulas of the Peripheral Vessels.
Franklin F. Snyder, Boston, Choice of Drugs for Analgesia in Labor.
Frank E. Whitacre, Memphis, Tenn., Diagnosis and Treatment of Bleeding in the First Trimester of Pregnancy.
John W. Harris, Madison, Wis., Postpartum Hemorrhage, Prevention and Treatment.
Ralph E. Campbell, Madison, Wis., Contracted Pelvis and Some Aspects of X-Ray Pelvimetry.
J. Robert Willson, Philadelphia, Pregnancy in the Patient with Chronic Hypertension.
Warren O. Nelson, Ph.D., Iowa City, Embryologic Relations in Malignancy.
Frank E. Adair, New York, Hormone Therapy on Metastatic Bone Disease in Cases of Breast Cancer.
Earl T. Engle, Ph.D., New York, Physiology of Menstruation.
Edwin C. Hamblen, Durham, N. C., Dysmenorrhea, Menstrual Edema and Other Cyclic Conditions.
Fred A. Simmons, Boston, Treatment of Female Infertility.
Robert S. Hotchkiss, New York, Types of Hypogonadism in the Male and Their Treatment.
Henry H. Turner, Oklahoma City, Precocious Puberty and Masculinizing Tumors of the Adrenal.

The registration for each course is limited to 100, and the fee is $50.

INDIANA

Centennial Meeting of State Association.—The Indiana State Medical Association will hold its centennial annual session September 26-29 at the Murat Temple, Indianapolis, under the presidency of Dr. Augustus P. Hauss, New Albany. Out of state speakers include:

Edward G. Billings, Denver, General Principles of Psychotherapy in General Practice.
Rolland J. Whitacre, East Cleveland, Prevention Preferred in the Operating Room.
Byrl R. Kirkland, Rochester, Minn., Bezoars of the Gastrointestinal Tract.
William T. Green, Boston, Treatment of Poliomyelitis.
Leonard A. Scheele, Washington, D. C., Physician's Role in the Fight against Cancer.
Frank C. Mann, Rochester, Minn., Hepatic Components in Some Physiologic Processes.
Udo J. Wile, Ann Arbor, Mich., Evaluation of Syphilis Therapy.
William L. Benedict, Minneapolis, Ocular Vascular Accidents.
Louis G. Herrmann, Cincinnati, Surgery of Large Arteries.
Arlie R. Barnes, Rochester, Minn., Effect of a Hormone of the Adrenal Cortex (Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatic Fever and Rheumatic Carditis.
Max D. Garber, Rochester, N. Y., Antibiotics in Treatment of Diseases of Children.
Samuel R. Snodgrass, Galveston, Texas, Early Diagnosis of Intracranial Tumor.
Donald A. Covalt, New York, Dynamic Therapy in Chronic Disease.
Howard C. Coggeshall, Dallas, Texas, Treatment of Arthritis.

A panel on "Peripheral Vascular Diseases," with Dr. Barnes as moderator, will take place Wednesday afternoon with Drs. Benedict, Herrmann, Charles A. Hufnagel, Boston, and Harris B. Shumacker, Indianapolis, taking part. A clinicopathologic conference is scheduled for Thursday morning and a panel discussion on "Hospital Rules and Regulations" and a symposium on "Modern Management of Thyroid Diseases" Thursday afternoon. At the dinner Thursday evening Mr. Kenneth McFarland, Topeka, Kan., will speak. Section meetings, special society meetings and luncheons are included in the program. The Woman's Auxiliary to the association will meet in conjunction with the association.

MARYLAND

Meeting of General Practitioners.—The first assembly of the Maryland Academy of General Practice will be held at the Alexander Hotel, Hagerstown, September 29. The program follows:

C. Rollins Hanlon, Baltimore, Surgical Aspects of Congenital Heart Disease.
Louis A. M. Krause, Baltimore, Psychosomatic Medicine.
George M. Lyon, Washington, D. C., Radioactive Isotopes in Clinical Medicine.
Thomas H. McGavack, New York, Diseases of the Thyroid.
John B. Montgomery, Philadelphia, Office Gynecology.
Edward S. O'Keefe, Lynn, Mass., High Caloric Diet in Treatment of Diarrhea in Infancy.
Francis F. Schwentker, Baltimore, Rheumatic Fever.
LeRoy H. Sloan, Chicago, Changing Patterns of Disease.

The registration fee is $5.

MASSACHUSETTS

Dr. Moritz Goes to Western Reserve.—Dr. Alan R. Moritz, head of the department of legal medicine at the Harvard Medical School, Boston, left September 3 to take up his new duties as professor of pathology and director of the Institute of Pathology at Western Reserve University, Cleveland. Before his departure the Massachusetts Medico-Legal Society at a special meeting presented to Dr. Moritz a scroll in recognition of his services. In his honor the society installed at the Harvard Medical School a bronze plaque commemorating his ten years of service which have "given legal medicine a new integrity and stature in the Commonwealth of Massachusetts," and it presented a sum of money to the school. Dr. Moritz has been a leader in the movement for the application of medical knowledge to the detection of crime and the investigation of deaths of unknown origin. In a series of seminars at Harvard he has trained many police officers, medical examiners and coroners from eastern states and the Middlewest. He is chairman of the Committee of the American Medical Association to Study the Relationships of Medicine and Law. He also lectured on legal medicine at the medical schools of Boston University and Tufts College. In addition to serving since 1939 as pathologist to the Massachusetts Department of Public Welfare, he was associate medical examiner of Suffolk County, pathologist in chief at Peter Bent Brigham Hospital and consultant at Children's Hospital. Dr. Moritz was graduated from the University of Nebraska College of Medicine in 1923. His postgraduate training in pathology was taken at Western Reserve University, the Lakeside Hospital of Cleveland and at the City Hospital of Vienna, Austria. He taught at Western Reserve and served as pathologist in charge, University Hospitals, Cleveland, before joining the Harvard faculty in 1937.

MISSOURI

Study Club Program.—The following programs for the remainder of 1949 have been arranged by the General Practitioners Study Club, St. Louis, to be held in Lecture Hall:

September 21, 9 p. m., Roy V. Boedeker, St. Louis, Management of Chronic Cervicitis; film on cervicitis.
October 19, 8 p. m., Phonographically Reproduced Heart Sounds of Valvular Lesions, and film, Management of the Failing Heart; James B. Stubbs, St. Louis, Changing Concepts of Congestive Heart Failure; Victor A. Bell, New York, Why the Recent Adverse Criticism of Digitoxin?
November 16, 9 p. m., Gilbert B. Forbes, St. Louis, Management of Convulsive Disorders and film on Allergy: Immunology and Treatment.
December 21, 9 p. m., Dr. Adolph H. Conrad Jr., St. Louis, Differential Diagnosis and Treatment of Common Skin Diseases; film on Hypothyroidism: Diagnosis, Etiology, Treatment.

NEW MEXICO

Medical Conference and Cancer Society Meeting.—The Southwestern Medical Conference and New Mexico Division of the American Cancer Society will meet at the Hilton Hotel, Albuquerque, November 9-12. Speakers include:

Evans W. Pernokis, Chicago, Anemias and Leukemia.
Elmer Belt, Los Angeles, Ureteral Intestinal Anastomosis.
Herbert W. Meyer, New York, Cancer of the Breast.
Donald M. Pillsbury, Philadelphia, Malignant Skin Lesions.
Allan M. Butler, Boston, Malignancies in Childhood.
Herbert F. Traut, San Francisco, Use of Vaginal Smear in General Gynecologic Diagnosis.
Otto C. Brantigan, Baltimore, Surgical Treatment of Peptic Ulcers.
William A. Rettberg, Denver, Present Status of Antibiotics.
William Boyd, Toronto, Ontario, Canada, subject to be announced.
Kenneth D. A. Allen, Denver, subject to be announced.

For reservations and information address Dr. Alvin H. Follingstad, care of the Chamber of Commerce, Albuquerque, N. Mex.

NEW YORK

Society News.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged a postgraduate lecture for the Jefferson County Medical Society meeting September 20 at 8 p. m. at the Black River Valley Club, Watertown. Dr. Robert F. Korns, Albany, will speak on "Epidemiology of Poliomyelitis."——The Utica Academy of Medicine meeting October 20 at 8 p. m. at the Hotel Utica will hear Dr. George A. Perera, New York City, speak on "Action and Use of the Adrenal Cortical Steroids, Including Cortisone."——The Geneva Academy of Medicine will hear Dr. Joe W. Howland, Rochester, speak on "Current Developments in the Use of Radioactive Materials for Medical Purposes" at a meeting September 19 at 8:30 p. m. in the Bellhurst Restaurant, Geneva.

Richard H. Hutchings Memorial Award.—A memorial lecture in honor of the late Dr. Richard H. Hutchings, former editor of *The Psychiatric Quarterly,* will be given at Syracuse University October 3, 8:30 p. m., in the auditorium of the College of Medicine. The lecturer will be Dr. Winfred Overholser, superintendent of St. Elizabeths Hospital, Washington, D. C., and his subject "Modern Trends in Psychiatric Treatment." A special memorial award of $100 to be presented by the committee for an outstanding contribution to psychiatry from a public mental institution has also been announced by Dr. Harry A. Steckel, chairman of the permanent memorial committee. It is presented by an anonymous donor through Dr. C. Charles Burlingame, psychiatrist in chief at the Institute of Living, Hartford, Conn., a member of the permanent memorial committee. Scientific articles, reports or nominations for the award may be submitted to Dr. Steckel or to Dr. Newton Biegelow, secretary-treasurer of the committee. Dr. Hutchings was superintendent of St. Lawrence Hospital, New York, and of Utica State Hospital, Utica, for many years. The memorial fund is still open for contributions. The fund, now totalling about $1,500, will be used solely for lectureship honoraria. All future contributions will be used for lectureship purposes unless otherwise specified by the donor.

New York City

Dr. Rusk Makes European Trip.—In his capacity as consultant in rehabilitation to the department of social affairs of the United Nations, Dr. Howard A. Rusk, chairman, department of rehabilitation and physical medicine, New York University College of Medicine, left for Europe early in September to participate in teaching seminars on rehabilitation. He will confer with officials of the World Health Organization in Geneva, Switzerland, of UNESCO in Paris, observe rehabilitation activities in England and return to New York in late October.

Personals.—Dr. Isidore H. Goldberger has been appointed director of health education of the Board of Education of the City of New York.——Dr. Rustin McIntosh has been elected president of the medical board of the Presbyterian Hospital; Dr. Howard C. Taylor Jr. succeeds him as vice president. Dr. George F. Cahill, former president, will retire after three years as president of the board. Dr. McIntosh is also Carpentier Professor of Pediatrics, Columbia University College of Physicians and Surgeons. Dr. Taylor is professor and chairman of the department of obstetrics and gynecology at the college.——Dr. Claude W. Munger, former director of St. Luke's Hospital, has received the 1949 award of merit of the American Hospital Association. He was cited for having advanced education and standards of hospital administration and for his leadership in health organizations. Dr. Munger retired last year as director of St. Luke's because of ill health.——Dr. Robert Ward, associate professor of pediatrics at the New York University College of Medicine has been appointed full professor of pediatrics.

PENNSYLVANIA

Benjamin Rush Awards.—The Emergency Aid of Pennsylvania, with headquarters in Philadelphia, and Mrs. Leonard D. Doggett of State College will receive the Benjamin Rush Awards for 1949, annual presentations made by the state medical society to the lay individual and the lay organization making the outstanding contributions to the health of the people of the commonwealth. Bronze medallions bearing a likeness of Dr. Benjamin Rush, a native Pennsylvanian, will be presented at the ninety-ninth annual session of the medical society in Pittsburgh September 27. Long a leader in health activities in Centre County, Mrs. Doggett has been active with the local Red Cross unit, the local cancer society, State College Nurses Association and Centre County Hospital (Bellefonte) Auxiliary and is chairman of the Health Committee of the Business and Professional Women's Club of State College. She was the first woman on the Centre County Hospital Board and has promoted and aided local legislation for better sanitary conditions in restaurants and for better water and sewage disposal facilities. Mrs. Doggett was nominated for this honor by the Centre County Medical Society.

Emergency Aid of Pennsylvania is a voluntary organization of women established in 1914, the objective of which is emergency relief work for the benefit of the military forces and civilian population of the United States and its allies. The organization is supported by dues from its 1,984 members and by proceeds from various projects and is registered and approved by the state department of welfare. Emergency Aid has provided transportation service for cerebral palsy patients to and from clinics, distributed gifts annually to all tuberculous patients in Municipal and Philadelphia General hospitals, Philadelphia, mended hospital garments, sponsored after-school recreation in public schools and in recent months has provided clothing, shoes, medical supplies and other aid to 2,301 families.

SOUTH DAKOTA

State Medical Election.—The South Dakota State Medical Association at its annual meeting installed Dr. William H. Saxton, Huron, as president and chose Dr. Clarence E. Robbins, Pierre, president-elect. Dr. Roland G. Mayer, Aberdeen, was elected secretary-treasurer.

TEXAS

Fund to Establish Instructorship.—Baylor University College of Medicine, Houston, has recently received a gift of approximately $53,000 to establish an instructorship. A cash donation of $3,000 and undivided oil royalties valued at $50,000 were made available by Mr. and Mrs. B. M. Goldsmith of Quitman as a memorial to their father, the late Dr. John B. Goldsmith. The fund will be administered by the Texas Baptist Foundation.

Southwestern Medical College to Become State University.—On request of the Board of Regents of the University of Texas, the house of delegates of the State Medical Association of Texas at their meeting July 13 selected Dallas as the site of a new medical branch of the university, and the regents accepted the offer of the Southwestern Medical Foundation to take over facilities of Southwestern Medical College. On September 1 the foundation turned over $1,408,000 in properties, buildings, library and equipment to the University of Texas. Plans are being made to increase the enrolment of the school for the fall term. The new medical branch was authorized during the recent session of the state legislature, which had instructed the house of delegates of the State Medical Association of Texas to survey and make a choice of location of the establishment of the medical school. Dallas, San Antonio and Temple were surveyed, and El Paso submitted information. The new branch will be known as Southwestern Medical School. The Southwestern Medical Foundation, which has operated the college for six years, is losing control to the state, but the school will remain the primary concern of the 11 year old foundation. According to Dr. Eben H. Cary, foundation president, its $2,000,000 in assets will be retained to help on faculty salaries and research. It is expected that other buildings will be erected for the medical school on a 40 acre site for a proposed medical center. In addition to drawing its premedical students from the University of Texas, it will serve as a medical school for Southern Methodist University, Texas Christian University, North Texas State College, Texas State College for Women and Arlington State College, all of which are within commuting distance.

WASHINGTON

Course in Surgery.—The Washington State Medical Association has arranged a graduate course in surgery September 26-30 at the King County Hospital in Seattle. The programs will begin at 9 a. m. and close at 4 p. m. The program chairman is Dr. John K. Martin.

Cerebral Palsy Center.—A new center for the medical and educational care of cerebral palsied children in Seattle was opened September 1 at Firland Sanatorium replacing the center located at McKay Memorial Research Hospital, Soap Lake. It is being operated jointly by the departments of public instruction and health under a special legislative appropriation. About 20 children were expected to be in residence by September 1. A professional advisory committee will be set up, consisting of representatives of schools, and a lay advisory committee will advise on matters of policy.

WISCONSIN

Cancer Teaching Clinic.—The Interurban Academy of Medicine will present a Cancer Teaching Clinic at the Hotel Superior, Superior, September 21 under the sponsorship of the 11th Councilor District, St. Louis County Medical Society and the Wisconsin Division of the American Cancer Society. There will be no registration fee. The program, which is financed through funds of the Wisconsin Division, American Cancer Society, and which will begin at 2 p. m., includes:

Gordon B. New, Rochester, Minn., Oral Cancer.
Motion picture: Cancer—The Problem of Early Diagnosis.
Walter G. Maddock, Chicago, Carcinoma of the Biliary Tract.

A symposium and question and answer period will follow the presentations. At the dinner session Dr. Robert A. Huseby, Minneapolis, will speak on "Recent Advances in Cancer, Their Evaluation and the Future Outlook of Treatment."

State Medical Meeting.—The State Medical Society of Wisconsin will hold its annual meeting at the Milwaukee Auditorium, Milwaukee October 1-5. Visiting speakers include:

Richard B. Capps, Chicago, Treatment of Liver Disease.
Robert L. Ward, New York, Diagnosis and Treatment of Poliomyelitis in the Early Stage.
Joe R. Brown, Minneapolis, Correlation of the Pathology, Symptomatology and Treatment of Bulbar Poliomyelitis.
Arthur C. Curtis, Ann Arbor, Mich., Sarcoid Disease.
Jessie C. Gray, Toronto, Canada, Carcinoma of the Rectum.
Reynold A. Jensen, Minneapolis, The Physician and Mental Health.
Winthrop M. Phelps, Baltimore, The Cerebral Palsied Child.
Heyworth N. Sanford, Chicago, Problems in Care of the Newborn.
Ivan B. Taylor, Detroit, Anesthesia, the Weakest Link in Surgical Procedure.
Nelson W. Barker, Minneapolis, Diagnosis and Treatment of Chronic Occlusive Arterial Disease of the Extremities.
Frederick Coller, Ann Arbor, Mich., Diagnosis and Management of Lesions of the Breast.
James W. J. Carpender, Chicago, Irradiation Therapy with Particular Attention to Radioactive Isotopes.
Lester R. Dragstedt, Chicago, Physiologic Principles in Surgery of the Stomach.

Dr. Ralph J. Gampell, San Francisco, lately of the University of Manchester, England, will speak at the annual dinner Tuesday on "Socialized Medicine as I Saw It." Clinical conferences will be held Monday at the Milwaukee Auditorium by staffs of Milwaukee hospitals. Round table luncheons with a limited attendance and motion picture programs are scheduled for each day. Section meetings will be held in internal medicine, obstetrics and gynecology, ophthalmology and otolaryngology, pediatrics, radiology and surgery. The Woman's Auxiliary will meet October 2-4 at the Hotel Schroeder.

WYOMING

Orthopedic Conferences.—The Wyoming State Department of Public Health will conduct orthopedic conferences for crippled children under 21 years of age September 23 through October 8. Physicians should refer new patients to the state department of public health before the conference, so that approximate attendance can be anticipated. Former patients should not attend unless invited. New patients are requested to furnish record of a recent general physical examination by a physician. Conferences will be held at the following places with Dr. Gordon Whiston, Casper, as orthopedist: September 23, Gillette; September 24, Worland; September 30, Cheyenne; October 1, Laramie; October 7, Kemmerer, and October 8, Rock Springs.

GENERAL

Change Pan American Conference Dates.—In order to accommodate a group of Mexican doctors who will attend the International Pediatrics Convention in Mexico City, the dates of the Second Congress of the Pan American Women's Alliance to be held in Los Angeles have been changed from November 1-6 to November 12-17.

Plague Infection in Fleas.—The U. S. Public Health Service reports that under date of July 8 plague infection was reported proved in specimens of tissue and ectoparasites from ground squirrels collected in Beaverhead County, Mont., on a ranch 24 miles northwest of Dillon on the Jackson road. Under date of July 29, plague infection was reported proved in specimens of fleas collected in Thomas County, Kansas, from two grasshopper mice and in fleas recovered July 13 by flagging abandoned burrows of prairie dogs. In Rio Arriba County, New Mexico, plague was reported proved in fleas from white-footed mice trapped July 12.

Meetings on Anesthesiology.—The Committee on Post-Graduate Education of the New England Society of Anesthesiologists has arranged a series of meetings on the management of surgical patients from the standpoint of the anesthesiologist, to be held at the Bigelow Amphitheatre, Massachusetts General

Hospital, 2 to 5 p. m., the first Saturday of each month, October through February 1950. All interested physicians are invited to attend.

Oct. 1, Circulatory Management of Surgical Patients.
Nov. 5, Respiratory Management of Surgical and Obstetrical Patients.
Dec. 3, Damage to the Nervous System Incident to Surgery and Anesthesia.
Jan. 7, Management of Analgesia and Anesthesia for Obstetrics.
Feb. 4, Management of Anesthesia for Children.

Further information may be obtained from Dr. Julia G. Arrowood, Massachusetts Memorial Hospitals, 750 Harrison Avenue, Boston 18.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

	Week Ended			Jan. 1 to		Total *	
Division and State	Sept. 3, 1949	Sept. 4, 1948	Median Expec.	Sept. 3, 1949	Sept. 4, 1948	March 19-Sept. 3, 1949	March 20-Sept. 4, 1948
New England States:							
Maine	37	4	4	261	19	261	19
New Hampshire	24	3	3	113	10	113	10
Vermont	15	1	5	57	14	55	13
Massachusetts	194	12	26	931	98	931	95
Rhode Island	17	..	1	67	...	67	...
Connecticut	56	9	13	291	62	288	61
Middle Atlantic States:							
New York	538	101	101	3,113	601	3,093	565
New Jersey	137	56	56	703	321	667	314
Pennsylvania	78	51	51	347	311	337	300
East North Central States:							
Ohio	171	65	43	892	539	886	530
Indiana	61	39	27	685	196	675	186
Illinois	282	87	93	1,805	445	1,789	438
Michigan	287	48	59	1,586‡	269	1,566‡	263
Wisconsin	101	39	32	516	190	502	190
West North Central States:							
Minnesota	168	90	40	1,079	457	1,040	449
Iowa	72	53	24	693‡	381	680‡	368
Missouri	101	12	12	918	118	907	118
North Dakota	52	38	11	341	65	337	65
South Dakota	38	21	4	204	93	182	93
Nebraska	39	27	13	295	305	282	300
Kansas	52	28	15	447	138	421	135
South Atlantic States:							
Delaware	4	7	4	33	97	31	96
Maryland	13	3	8	87	32	78	31
District of Columbia	7	11	8	48	60	47	60
Virginia	27	31	31	190	289†	180	287†
West Virginia	23	12	5	227	78	220	73
North Carolina	9	137	10	159	1,896	132	1,872
South Carolina	4	23	4	69	258†	56	250†
Georgia	5	13	8	114	151	106	150
Florida	14	12	4	155	176	134	159
East South Central States:							
Kentucky	60	11	6	353	119	345	116
Tennessee	36	34	18	339	216	333	209
Alabama	13	10	2	159	128	146	116
Mississippi	6	8	7	220	87	209	85
West South Central States:							
Arkansas	44	9	4	760	95	749	93
Louisiana	7	10	7	152	85	140	79
Oklahoma	50	14	14	871	234	864	228
Texas	63	52	23	1,669	1,308	1,578	1,287
Mountain States:							
Montana	8	6	2	33	34	32	24
Idaho	27	3	3	296	84	283	57
Wyoming	7	2	2	68	56	68	56
Colorado	55	13	13	328	57	326	55
New Mexico	16	4	2	108	49	107	47
Arizona	11	11	3	106	72	95	71
Utah	19	3	3	110	37	94	34
Nevada	1	1	..	11	3	11	2
Pacific States:							
Washington	50	9	12	308	117	263	99
Oregon	9	8	8	106	66	90	50
California	89	264	33	1,318	2,141	1,029	2,109
Total	3,197	1,505	.....	23,740‡	12,657†	22,824‡	12,307†
Median, 1944-1948			1,505	9,474		9,211	

*Last two columns show reported incidence since approximate seasonal low: 24 weeks.

†Corrected figures.

‡ Current corrections (made in cumulative totals): Michigan, deduct 2 cases for week ended August 27; Iowa, add 32 cases for week ended August 27.

Care Book Program.—The U. S. National Commission for UNESCO and the National Research Council's Committee on UNESCO have formulated the UNESCO-Care Book Plan, under which Care will distribute "Book Packages." The program is aimed at supplying scientific and cultural institutions abroad with technical books to bring about scientific and cultural reconstruction. The book lists, which are not issued publicly by Care, are made up of textbooks for college and graduate study, most of which have been published since 1940. Care undertakes to accept gifts of money from American scientists and in return assumes the responsibility of purchasing and shipping the books to institutions abroad. Although Care hopes that the majority of contributions will be undesignated, donors of $10 or more may specify one or all of the following: country, type of institution, category or categories of books. If a donor of $10 or more desires to name a specific institution, he may do so. It will be helpful if he also specifies the category of books to be sent. Books cannot be sent to individuals. This is not a used book program and donors should not send books. Checks and money orders should be sent to Care Book Program, Care, 20 Broad Street, New York 5. This program has been developed in cooperation with UNESCO, the Library of Congress, the American Library Association, medical and scientific associations, and governmental authorities overseas. The advisory Committee on Voluntary Foreign Aid of the United States State Department has approved the project. The American Medical Association has approved a nationwide program for the medical profession, and the Board of Trustees of the Association has appointed a special committee to work out the details of the Care-A. M. A. program.

Indictment for Price Fixing on Medical X-ray Film.—Attorney General J. Howard McGrath announced September 1 that a federal grand jury at Los Angeles returned an indictment charging six corporations and four persons with violating the Sherman Antitrust Law by fixing prices on medical x-ray film sold in the Southern California areas. The following corporations and individuals were named as defendants in the indictment:

General Electric X-ray Corporation, Milwaukee.
Kelekct X-Ray Sales Company of Los Angeles, Los Angeles.
Kelley-Koett Manufacturing Company, Cincinnati.
R. L. Sherer Company, Los Angeles.
Westinghouse Electric Corporation, Pittsburgh.
Henry N. Beets, doing business as Henry N. Beets Company, 2611 W. 7th Street, Los Angeles.
Geoffrey Grayston, formerly doing business as Grayston X-Ray Company, 1814 W. 9th Street, Los Angeles.
F. Clair Morgan, doing business as F. Clair Morgan Company, 1831 W. 9th Street, Los Angeles.

The indictment charges the defendants with having entered into a conspiracy to fix the prices at which medical x-ray film was sold to hospitals, doctors, roentgenologists, x-ray laboratories, clinics and other users in the Southern California area, where approximately $4,000,000 worth of medical x-ray film is sold annually. The defendants are also charged with having rotated and fixed prices on bids submitted for the Los Angeles County Hospital business during the period 1946 to 1948. The purchases of medical x-ray film by the county hospital amount to about $100,000 per year.

Announcing the return of the indictment by the Los Angeles Federal Grand Jury, the attorney general said, "This is another in a series of cases brought by the Department of Justice to eliminate restraints of trade in a field vital to public health. Illegal conspiracies of the type here charged increase the cost of medical services to the public and increase the operating cost of public health service." The case is under the general supervision of Marcus A. Hollabaugh, chief of the Special Litigation Section of the Antitrust Division.

CORRECTION

Postgraduate Courses.—In the extensive list of postgraduate courses in The Journal of June 25, the course in basic sciences of ophthalmology offered by Tulane University School of Medicine, given annually July 1 through April 30, was inadvertently omitted.

"Maternal Deaths from Coccidioidomycosis."—Smale and Birsner in their paper on this subject in The Journal, August 6, page 1152, stated that a search of literature failed to discover a single publication concerning the occurrence of disseminated coccidioidomycosis during pregnancy. Dr. Smale now writes that they were in error and, in the preparation of their paper, had overlooked a report on this subject by Mendenhall, Black and Pottz in the *Rocky Mountain Medical Journal*, June 1948, page 472.

Marriages

John E. Rockwell Jr., San Carlos, Calif., to Miss Blanche Guerin of San Francisco, June 24.

William J. Little Jr., Racine, Wis., to Miss Dorothy Kraudelt in Dearborn, Mich., June 18.

John T. Crissey, Tonawanda, N. Y., to Miss Alice Hogue of Buffalo, in Atlanta, July 30.

Deaths

Bonnelle William Rhamy ⊕ Fort Wayne, Ind.; born in Findlay, Ohio, Feb. 11, 1874; Fort Wayne College of Medicine, 1898; professor of physiology at his alma mater from 1902 to 1904; city bacteriologist in 1905; specialist certified by the American Board of Pathology; charter member of the American Society of Clinical Pathologists and for many years a member of the Indiana State Council; one of the founders of the Indiana State Pathological Association; member of the College of American Pathologists, American Association for the Advancement of Science, National Geographical Society, American Heart Association, Fort Wayne Academy of Science and the venereal disease control commission of the Indiana State Medical Association; member of the Chamber of Commerce, Institute of American Genealogy and the Virginia Historical Society; served in France and Germany during World War I; member of the Indiana Medical Advisory Board no. 4, Selective Service System; at various times pathologist at the Defiance (Ohio) Hospital, Sacred Heart Hospital, Garrett, Wells County Hospital, Bluffton, Parkview Hospital, Plymouth, Woodlawn Hospital, Rochester, Lutheran, Methodist and St. Joseph's hospitals; clinical pathologist and founder of the Fort Wayne Medical Laboratory; member of the "Fifty Year Club" of the Indiana State Medical Association; died May 26, aged 75, of arteriosclerotic heart disease and diabetes mellitus.

Staige Davis Blackford ⊕ Charlottesville, Va.; born in Alexander, Va., Dec. 28, 1898; University of Virginia Department of Medicine, Charlottesville, 1925; professor of the practice of medicine and chairman of the clinical staff at his alma mater; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians and the American Clinical and Climatological Association; during World War I served with the University of Virginia section of the Army Ambulance Service and was decorated with the Croix de Guerre; during World War II chief of the medical service of the 8th Evacuation Hospital in North Africa and Italy for thirty months and was awarded the Legion of Merit for his work in that hospital; decorated with the Medal of French Morocco; recently elected editor of the University of Virginia Medical Alumni Bulletin; on the staff of the University of Virginia Hospital, where he died July 17, aged 50, of coronary thrombosis.

Max Alexander Novey, Baltimore; born in New York Sept. 23, 1899; Johns Hopkins University School of Medicine, Baltimore, 1923; assistant professor of obstetrics at the University of Maryland School of Medicine and College of Physicians and Surgeons; lecturer on public health administration, Johns Hopkins University School of Hygiene and Public Health; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; director of the department of child hygiene, city health department; a member of the board of trustees and the medical advisory board of the Maryland Rheumatic Fever Association; affiliated with Mount Sinai Hospital, South Baltimore General Hospital and Provident Hospital and Free Dispensary; died July 16, aged 49.

William Denton Rowland ⊕ Boston; born in Greencastle, Pa., Dec. 6, 1879; University of Michigan Homeopathic Medical School, Ann Arbor, 1911; professor emeritus of ophthalmology at the Boston University School of Medicine; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology and the New England Ophthalmological Society; fellow of the American College of Surgeons; served in the medical corps of the U. S. Army during World War I; affiliated with Massachusetts Memorial Hospitals; consulting ophthalmologist, Westborough (Mass.) State Hospital and the Leonard Morse Hospital in Natick; died July 1, aged 69, of hypertensive vascular disease.

Jacob John Westra ⊕ Champaign, Ill.; born in Grand Rapids, Mich., March 2, 1908; Rush Medical College, Chicago, 1937; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; secretary treasurer of the Champaign County Medical Society; member of the Champaign County Chapter of the American Cancer Society; an associate of the American College of Physicians; entered the Mayo Foundation in Rochester, Minn., as a fellow in April 1938 and remained until Oct. 1, 1939; associated with the Christie Clinic; on the staffs of Burnham City Hospital in Champaign, McKinley Hospital and Mercy Hospital in Urbana, where he died July 17, aged 41, following a cholecystectomy.

Joseph James Anderson, Richmond, Va.; Medical College of Virginia, Richmond, 1893; member of the American Medical Association; died May 19, aged 79, of pulmonary embolism.

Harold M. Brown, Klamath Falls, Ore.; John A. Creighton Medical College, Omaha, 1904; served during World War I; affiliated with Hillside and Klamath Valley hospitals; died May 16, aged 76, of cerebral hemorrhage.

Claude Lester Davis, Hinesville, Ga.; Emory University School of Medicine, Atlanta, 1916; member of the American Medical Association; served during World War I; died at his home May 21, aged 58, of coronary thrombosis.

Lyman Edwin Dockry ⊕ San Diego, Calif.; Marquette University School of Medicine, Milwaukee, 1917; member of the State Medical Society of Wisconsin; past president of the Brown-Kewanee-Door Counties Medical Society in Wisconsin; served in the regular U. S. Navy during World War I and in the U. S. Naval Reserve during World War II; died in the U. S. Naval Hospital May 19, aged 56, of hypertensive heart disease.

Herman H. Kamman ⊕ Columbus, Ind.; Kentucky School of Medicine, Louisville, 1903; formerly secretary and vice president of the Bartholomew County Medical Society; served as county health officer, city health officer and county coroner; on the staff of the Bartholomew County Hospital; died May 20, aged 77, of cerebral hemorrhage and arteriosclerosis.

William Sargeant Knox, West Lebanon, Pa.; University of Pittsburgh School of Medicine, 1937; served during World War II; suffocated May 24, aged 36, as a result of fire caused by a cigaret he was smoking while in bed.

Herbert Boyd Masten, Springer, N. Mex.; Columbia University College of Physicians and Surgeons, New York, 1893; affiliated with Springer Hospital; died May 19, aged 79, of coronary thrombosis.

Robert Graham Morrison, Denver; Denver and Gross College of Medicine, 1903; died May 17, aged 72, of perforated duodenal ulcer.

Harry Baron Press, Los Angeles; Drake University Medical Department, Des Moines, 1908; died in the Queen of Angels Hospital May 25, aged 62, of injuries received when struck by an automobile.

Jacob J. Roth, Newark, N. J.; Universitat Zürich Medizinische Fakultät, Switzerland, 1908; died in Passaic recently, aged 66, of cancer of the rectum with metastases.

Walter Franklin Sowers, Baltimore; University of Maryland School of Medicine, Baltimore, 1906; police surgeon for many years; served on the staff of Maryland General Hospital, where he died May 31, aged 67.

Charles Paul Stockdale, Boulder, Colo.; State University of Iowa College of Medicine, Iowa City, 1905; Barnes Medical College, St. Louis, 1908; died May 4, aged 69, of pneumonia.

Jacob Talso ⊕ Ishpeming, Mich.; Chicago College of Medicine and Surgery, 1910; died in St. Luke's Hospital, Marquette, May 30, aged 76, of acute coronary occlusion.

Robert Wiley Thompson, Weslaco, Texas; Vanderbilt University School of Medicine, Nashville, 1895; University of Nashville Medical Department, 1895; formerly practiced in Lumberton, Miss., and from 1914 to 1916 a member of the Mississippi State Board of Health; died in Corpus Christi May 3, aged 80, of heart disease.

Wesley B. Wasson ⊕ Nixa, Mo.; University of Louisville (Ky.) Medical Department, 1890; an Associate Fellow of the American Medical Association; past president of the Christian County Medical Society; died May 20, aged 86, of carcinoma of the intestine.

Henry C. Watkins, Memphis, Tenn.; Memphis (Tenn.) Hospital Medical College, 1901; died in the Methodist Hospital May 18, aged 77, of carcinoma of the colon.

Walter Lewis Williams, Brookneal, Va.; Medical College of Virginia, Richmond, 1885; member of the American Medical Association; charter member of the Lynchburg Academy of Medicine; died in the Virginia Baptist Hospital, Lynchburg, June 26, aged 88.

George Forest Wright ⊕ Johnstown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1921; at one time health officer of Franklin and Conemaugh boroughs; served as school physician for Conemaugh; associated with the Conemaugh Valley Memorial Hospital, Mercy Hospital and the Lee Homeopathic Hospital, where he died June 8, aged 56, of cerebral hemorrhage.

George Augustus Yaeger, Chicago; Rush Medical College, Chicago, 1885; died June 22, aged 82, of bronchopneumonia.

Foreign Letters

ITALY

(From Our Regular Correspondent)

FLORENCE, July 15, 1949.

Second World Assembly of Health

The second World Assembly of Health was held in Rome June 13-July 2 on the invitation of the Italian government. The site was the historic Venetian Palace, which had been suitably reorganized with technical and sanitary services under supervision of a secretarial office created by the high commissioner for Hygiene and Public Health, Prof. Mario Cotellessa. The plenary sessions took place in the great Sala Regia where each delegate was furnished with a small radiophonic apparatus with a cap which permitted listening to the reports in various languages with translations at the same time they were presented.

Concerning malaria, the World Health Organization supported the various governments in the campaign against this disease, and it stimulated public opinion so that suppression of this scourge may be on a worldwide scale. Only 4 deaths due to malaria were reported in 1948, which is the lowest annual incidence in Italian history. In one of the major islands belonging to Italy, Sardinia, there was complete suppression of Anopheles, through an energetic campaign carried out under the auspices of the Italian government and the Rockefeller Foundation.

The World Health Organization has maintained close contact with the Italian government, to which it has given advice and technical assistance by a committee of experts. Dichlorodiphenyltrichloroethane (DDT) was the main weapon used in the island of Sardinia in the campaign against the Anopheles.

In Greece, as the result of the antimalarial campaign, in certain regions the incidence of the disease was reduced from 85 to 5 per cent.

Four thousand and seven hundred localities in Greece were treated with DDT, and 28,500 hectares of mosquito-infested soil were dusted from the air with DDT.

Antimalarial action on a large scale has been planned under the auspices of the World Health Organization in numerous other countries.

In the fight against tuberculosis, the health services of various nations have received direct support from the World Health Organization in the form of demonstration units, instruction by expert consultants, special courses and information about the most recent technical problems and about the value of new therapeutic agents, such as streptomycin.

The World Health Organization has cooperated with the Danish Red Cross, Scandinavian organizations and the International Funds of the United Nations for Children's Help, with the aim of activating a program to identify tuberculous persons by means of the tuberculin reaction and to carry out BCG vaccination on a large scale. In Europe alone 9,000,000 infants and children were examined and 3,500,000 vaccinations performed. The campaign has been extended to many countries in Asia, in the Mediterranean East, in North Africa and in Latin America. Probably about 100,000,000 persons will be benefitted by this campaign.

In the field of venereal diseases, the situation after the war presented two noteworthy facts: (1) the alarming increase in the number of affected persons—in the United States alone the loss in production caused by venereal diseases has been calculated as more than $100,000,000 for 1946—and (2) the primary importance of penicillin in the treatment of venereal diseases.

Poland, after consultation with the World Health Organization, was the first country in Europe to carry out an effective attack against venereal diseases based on treatment with penicillin. Within a few months more than 500,000 persons were examined, 75,000 of whom were cured with penicillin, the total cost of which was about $385,000.

An international committee of experts called together by the World Health Organization recommended the extension of the campaign against diphtheria, whooping cough and other diseases of children, in addition to the antisyphilitic and antimalarial campaign.

Mental Health

Of considerable importance is the work developed by the World Health Organization in the field of mental health. The problems of mental hygiene pertain in nearly all the branches of medicine and are taken into consideration by the World Health Organization in dealing with alcoholism and toxicomania and in programs for the campaign against tuberculosis, venereal diseases and malaria. An investigation of psychoneuroses has demonstrated that in an industrial unit the neuropathic disturbances caused a loss in working hours which was greater than that caused by common colds.

In Ethiopia, Greece and China, the World Health Organization has given practical assistance. Urban quarters had been dusted with DDT with the aim of destroying hematophagous insects; the water supplies have been restored, and appropriate methods for removal of refuse have been introduced. Sanitary measures have been organized for the refugees from Palestine in conjunction with aid given by the national units; thus the danger of epidemics among the 800,000 persons in the refugee camps of Lebanon, Palestine, Syria and Transjordan has been lessened.

For 1950 an extensive program of work has been traced, based on an ordinary budget of $7,893,000 and completed from an extraordinary budget of $9,152,520. The main items of this program are: the creation of a "model area" in a locality affected by endemic diseases; continuation of the antimalarial campaign; increase of maternal and infantile hygiene and campaigns with respect to mental hygiene, venereal diseases, tuberculosis, infectious diseases, virus diseases and diseases of children. In addition, the publication of an international pharmacopeia will be undertaken for the first time in history.

Surgical Treatment of Hypertrophic Prostate

At the Medical Academy of Genoa, Prof. G. Nicolich discussed surgical treatment of the hypertrophic prostate.

In four years Professor Nicolich performed 180 prostatectomies or resections of the neck of the bladder by the transvesical route with a mortality rate of 3.3 per cent, 27 perineal prostatectomies with a higher mortality rate, for which the greater severity of the condition may have been responsible, 30 prevesical prostatectomies with an insignificant mortality rate and numerous endoscopic resections.

On the basis of his personal experience he stated that endoscopic resection may be preferred to prevesical intervention for small prostatic neoformations. However, the high costs of instruments may present a major difficulty for more general use of endoscopic resection.

Perineal or prevesical intervention may be preferred for moderate prostatic enlargement, although the perineal method almost always causes impotence and frequently causes urinary incontinence. Satisfactory results in general may be obtained with the prevesical technic. The transvesical prostatectomy in one or two stages should not be abandoned completely, because its immediate and late results are excellent, although it entails a longer period of recovery.

For larger prostatic neoformations, Professor Nicolich prefers transvesical prostatectomy in two stages.

Membranous Pericolitis and Pseudoappendicitis

In a meeting of the Neapolitan Society of Surgery Professor De Leo called attention to so-called pseudoappendicitis. Jackson's membrane is one of the causes of a congenital abnormality. It resembles a covering, cord or ribbon, which may be observed at the periphery of the intestinal tract from the terminal loop of the ileum to the transverse colon. Professor De Leo has observed such membranes in about 11 per cent of his patients for whom operations were performed after a diagnosis of appendicitis, and in 5 of 10 necropsies performed on persons who had died from digestive diseases. In contrast to this, the records of the Pilgrim Hospital in Naples revealed a death rate of approximately 0.6 per cent in 2,022 patients who had undergone appendectomy.

Professor De Leo suggests that the difference in statistics is due to confusion of Jackson's membrane with adhesions. The differentiation is important because inflammatory adhesions may recur after section or excision, whereas this does not occur with Jackson's membrane. Removal of inflammatory adhesion does not seem indicated, while removal of Jackson's membrane usually is recommended.

PARIS

(From Our Regular Correspondent)

July 10, 1949.

A New Sign of Death

Icard's process with fluorescin is at present considered the most certain means of ascertaining death. At one of the last meetings of the National Academy of Medicine, Prof. V. Balthazar proposed a process which he has used efficaciously for twenty-five years. In 1923, one of his disciples, Dr. Rebouillat, demonstrated that the subcutaneous injection of 1 to 2 cc. of ether is resorbed as long as a vestige of life persists, whereas, if death has occurred, ether spurts back when the needle is withdrawn. This process offers the advantage of being without danger for the subject in a state of apparent death, and it constitutes, at the same time, the first means of restoring the subject to life. Every time this sign has been positive, it has been impossible to reanimate the subject. This is important, as it permits one to proceed with autopsy and with the taking of grafts and other organs immediately after death (provided the subject is dead and there exists no possibility of reanimation) as authorized by the recent legal provisions. Professor Balthazar proposed the use of the "ether sign" especially in newborn infants, among whom apparent death is frequent, and he predicted that this new sign will replace all others in present use.

Fourth International Scientific Conference at Dax

The Fourth International Scientific Conference will take place in Dax Oct. 13-16, 1949, under the auspices of the International Society of Medical Hydrology and the French League Against Rheumatism (president Professor Portman, dean of the Bordeaux faculty of medicine). The subjects to be discussed are: (1) peloïds; (2) nontubercular hydrarthrosis of the knee; (3) hydrarthrosis of the knee and (*a*) gout, (*b*) syphilis, (*c*) tumors and (*d*) nervous arthropathies; (4) vascular disorders; (5) infectious pseudorheumatism; (6) progressive inflammatory chronic rheumatism; (7) arthrosis; (8) periarthritis; (9) endocrinian hydrarthrosis; (10) traumatic and nontraumatic hydrarthrosis; (11) hydrarthrosis of the knee in children; (12) biopsy and articular puncture in the diagnosis of hydrarthrosis of the knee, and (13) physical therapy, crenotherapy and medical and surgical treatment in hydrarthrosis. Sight-seeing trips are planned in Dax, Hossegor, Biarritz and St. Jean de Luz; there will also be a banquet. All communications should be addressed to: Commission médicale de la Guatrième Conférence Scientifique Internationale de Dax, Hotel Splendid Cours de Verdun, Dax (Landes), France.

BELGIUM

(From Our Regular Correspondent)

July 19, 1949.

Medicolegal Diagnosis of Alcoholic Intoxication

G. Kettenmeyer, who has been charged with making a report by the commission appointed to study the medicolegal diagnosis of alcoholic intoxication, has presented the results of these investigations to the Belgian Society of Legal Medicine.

Only the determination of alcohol in the blood gives maximum precision. The interpretation of the determination of the quantity of alcohol in other body fluids can give rise to disputes. Nevertheless, examination by a physician of persons supposedly in a state of intoxication is useful, and the result of these clinical determinations should be noted in a special observation blank, such as in use in the judiciary department of the district of Brussels. The physician concerned with the legal aspects who is in possession of these results will be able to estimate the degree of alcoholic intoxication.

The commission has decided that systematic medicochemical diagnosis of alcohol intoxication will be possible if withdrawal of blood is obligatory.

Professional Life

The Association of Professional Organizations of Specialists has been formed in Brussels to bring together Belgian professional organizations of medical specialists for (1) the study, protection and development of professional interests of medical specialists and (2) the study of conduct in the relationships of medical specialists with patients and colleagues and with diverse collective bodies and public authorities.

Atomic Research in Belgium

The University Institute of Nuclear Research—composed of selected specialists in the establishments of higher education in the country—has been charged with creating a center of atomic research which will be erected in a suitable locality. It is believed that the site is an isolated part of the Ardennes. This center will be made effective in 1950. It will be interested especially in the construction of an atomic pile and will be active in the production of radioactive isotopes.

MADRID

(From Our Regular Correspondent)

July 9, 1949.

Pharmacology and Therapeutics

The chair of pharmacology and therapeutics of the University of Madrid for many years was occupied by Dr. T. Hernando. Among his former students are: Dr. T. Alday Redonnet, who has studied the pharmacology of digitalis; Dr. R. Méndez, formerly of the Department of Pharmacology, Loyola University, Chicago, but now with the Instituto de Cardiologia of México, and Dr. B. Lorenzo Velázquez, who occupies the chair formerly held by Dr. Hernando at the University of Madrid.

Included in the research at the University of Madrid is a study of the spasmolytic effect of sodium beta-glycerophosphate on the uterus and its analeptic effect on respiration. The intravenous injection of this substance causes decreased uterine hypertonicity. Obstetric clinics in Spain, Portugal, Italy, Cuba, Argentina and some other countries are using this substance. While studying procaine, researchers found that the etanolic diethyl-amino group inhibits cholinesterase whereas the benzoic para-amino group does not affect cholinesterase. They also found that procaine increases the effect of posterior pituitary injection so that only one third of the normal dose of the latter is needed with procaine if administered concurrently. Some of the studies seem to indicate that inhibition of the acetylcholinergic action occurs in narcosis.

Drs. Lorenzo Velázquez, Bayo and García de Jalon are studying a histolytic saphrophytic (nonpathogenic) bacterium which is found in the air. The results of some of the studies of Dr. Velázquez and his collaborators are published in *Farmacoterap. actual* (**55-56**:10) 1949. When this organism is planted in an aqueous medium with sodium glycerophosphate solution, 1 : 1,000, and histamine hydrochloride (10 cc. of sodium glycerophosphate solution to 1 cc. of histamine hydrochloride) the histamine disappears within eight or ten days. The histaminolytic action of the bacteria can be increased by passing them through blood agar. When the activated bacteria are planted again in the glycerophosphate histamine solution, inactivation of histamine occurs within eight or ten hours. The bacteria when planted in the culture medium liberate histaminase or an enzyme which destroys histamine. Dr. Meier of Basel and his associates also studied the same strain, which they obtained from Madrid. They identified histaminase in the filtrate of the bacterial cultures. This is an aerobic organism; and when the organism or the bacteriologic medium containing it is in contact with air it produces a large amount of histaminase which is highly thermolabile. The strain of the aforementioned bacteria will be sent to all scientific departments requesting it. The address is: Dr. B. Lorenzo Velázquez, Instituto de Farmacología, Facultad de Medicina, Atocha 104, Madrid, Spain.

Correspondence

DIAGNOSIS OF CANCER

To the Editor:—The editorial entitled "Diagnosis of Cancer" appearing on page 586 of The Journal, February 26, is disappointing. The writer failed to understand the spirit and stimulation of Dr. Greene's article in the *Scientific American.* This is evident in the first sentence, where the editor uses the word "deprecatory" to describe statements in Dr. Greene's article. Dr. Greene nowhere in his article disapproves of the standard and practical methods of diagnosis of cancer. What he does do is present a new tool for the study and appreciation of cancer. He points out that the bone of contention is the definition of cancer. If the method which he describes—that is, the heterologous transplantation method—will lead to a more accurate definition, it will be of extreme value, even if it proves to be of no value in any other respect.

The editorial writer calls for "proof," and yet he distorts the examples given in Dr. Greene's article to "prove" his own objections to the article. He constantly admits that errors can and have been made in determining malignancy by the routine microscopic examination, and yet he objects to a new method that may lead to a complete change in our concept of malignancy. The article was written for lay readers and therefore had to be written clearly and unequivocally. I doubt seriously that it undermines anybody's confidence in the medical profession; rather, I think, it does the opposite; it stimulates the public confidence that advances are being made in the field of cancer, with the hope of ultimate understanding and cure. The public is a great advocate of scientific advance and would probably object, I believe, to being called in as a dumb witness in condemnation of a first rate popular scientific article.

Thomas N. Meredith, M.D., Pittsburgh.

Comment:—The editorial objected to certain quoted statements in a paper published in the *Scientific American,* December 1948, by Dr. Harry S. N. Greene. The objections were illustrated by four quotations from the article and were based on statements some of which were untrue, or partly true, or potentially misleading. These statements might cause unwarranted loss of confidence on the part of the public in one of the standard methods for diagnosing cancer—and this at a time when great efforts are being made to educate the public to have earlier diagnosis of cancer, by submitting to biopsy if necessary. A number of highly qualified persons after reading the article concurred in the opinions expressed by the editorial, and others have commented favorably after reading the editorial.

The editorial made no comment on the heterologous intraocular transplant test as an interesting, stimulating and perhaps important technic for studying the biology of neoplasms. It did object to its being advocated as a reliable test for cancer. For example, the statement (which was not quoted in the editorial) made on page 42, to the effect that "For the present, heterologous transplantation provides a reliable test for cancer," is false on the basis of evidence now available. A recent report in the literature (Eichwald, E. J.: Heterologous Transplantation of Cancer of Childhood, *Cancer Research* 8:273 [June] 1948) found one successful "take" in 158 animals (1 case in 27 tests). The greatest degree of success that Greene has reported is 4 "takes" in 11 cases (Greene, H. S. N.: Heterologous Transplantation of Mammalian Tumors: II. The Transfer of Human Tumors to Alien Species, *J. Exper. Med.* 73:475-486 [April] 1941). True, Greene later reported 10 successful takes, but he failed to state how many negative results he had during that same period (*Cancer Research* 4:352 [June] 1944). On direct question as to how many positive cases he would have in 100 consecutive cases of cancer, Greene failed to reply (J. A. M. A. 137:1364 [Aug. 14] 1948). There are other reports of negative results in the literature. Neither Greene nor others, therefore, have presented evidence that this is a reliable test for cancer. The evidence points to the contrary.

At the same time these data disprove Greene's statement (page 41) that . . . "It is significant that all tumors which possess the ability to invade and metastasize to other tissues in the body can be transplanted to animals of alien species . . . ." on the basis of his own published results.

Greene apparently wishes to redefine the word "cancer" (page 41). It would probably be better if he were to coin a new word to describe the ability to "take" after transplantation into the anterior chamber of an alien species. There would be no objection to this. It would permit the word "cancer" to be retained to signify a new growth of tissue which the body is unable successfully to bring under complete control. This tissue can invade, metastasize and kill the human host (conforming to the definition of cancer) even if it is not transplantable to an alien species.

As was stated by Dr. Meredith, the editorial used the word "deprecatory" in relation to certain statements of Greene. It is now apparent that a stronger word could have been justifiably used. The article in question contained not only statements which can be regarded as deprecatory to microscopic diagnosis of cancer, but statements which, on the basis of evidence now available, are untrue. The adverse influence which these statements might have on the public and on that segment of the medical profession which has not followed the developments in this special field of research is regretted.

BROMIDES, HYPOPHYSIS AND THYROID

To the Editor:—I have read the interesting article by Ravdin, Rose and James Maxwell, which appeared in The Journal (**140**:141-146 [May 14] 1949) under the heading "The Treatment of Thyrotoxicosis." With respect to the first part of that article, in which various treatments of thyrotoxicosis are dealt with, I wish to call the attention to the action of bromides (sodium bromide) on the thyroid and the hypophysis.

In a group of researches (worked out from 1934 to 1943, *Arch. di fisiol.,* 1939-1940; *Boll. Soc. ital. biol. sper.* 1936, 1939 and 1943; *Naturwissen.*, 1938-1940; *Riv. Svizzera di Med.*, 1940), my co-workers and I showed that sodium bromide when administered for a long period and in proper doses to animals (dogs, rabbits, rats) causes a remarkable decrease in the iodine content of the thyroid and, consequently, evident hypofunction of this gland. This is physiologically proved by a decrease of basal metabolism, arrest of growth in young animals and so forth.

Bromide causes also a hypofunction of the hypophysis. These observations are somewhat in accord with G. Deltour's views (*Presse méd.* **25**:42, 1949) according to which "the ideal antithyroid agent would be that which would have an inhibitory action on the thyroid secretion and on the hypophysis."

The investigations hitherto carried out by my co-workers and me have purely an experimental character. Nevertheless, we do not deny that they may find clinical application, as we maintain, based on experimental data, that bromide is to be considered a substance with an antithyroidal action even if the details of the mechanism of action are not yet clear.

Giovanni Moruzzi
Istituto di Biochimica
University of Bologna

IN SUPPORT OF HYGEIA

To the Editor:—Although I have been out of medical school for more than five years, I have only recently become acquainted with *Hygeia* magazine. The attention of all doctors should be called to the valuable service this periodical can perform for them if their patients read it. The articles give the patients the sort of knowledge we find in our medically well educated patients and try to impart with considerable pains to our less well educated patients; yet the information given never invades the doctor's province—unlike medical articles in almost all other periodicals. We doctors can save ourselves much time and energy and facilitate instruction in health preservation by urging all our patients to subscribe to and read *Hygeia* thoroughly.

Arthur F. Greenwald, M.D., Los Angeles.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston. April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II,* New York City, Feb. 9-10. Address: Sec.-Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A Buie, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers. October 26 Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

Arkansas: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado: * *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Illinois: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Minnesota: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Jefferson City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Montana: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City.

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe. Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

Ohio: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oregon: *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland.

Oklahoma: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

Rhode Island: * *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Tennessee: * *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

Wisconsin: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona: *Examination.* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Connecticut: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Minnesota: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Medical Motion Pictures

FILM REVIEWS

The following 16 mm., black and white, silent motion pictures are a series of psychiatric films on Integrated Development: Studies of the Interaction between children and their environment. Prepared by Margaret E. Fries, M.D., and her collaborators at the New York Infirmary for Women and Children. Procurable on rental or purchase from the New York University Film Library, 26 Washington Place, New York 3.

Some Basic Differences in Newborn Infants During the Lying-In Period. 540 feet (2 reels), showing time twenty-two minutes. Produced in 1944.

This film attempts to illustrate the differential behavior responses to standard stimuli among three "types" of newborn babies: the "active," the "moderately active" and the "quiet." In one test a weight is dropped from a constant height at a given distance from the child; another test is based on suckling and withdrawal of the breast for intervals of one minute each. According to the film one "type" of child will always respond to startle or deprivation with restless activity, another with passive resignation or sleep and a third with patterns of reaction somewhere between these extremes. The film implies, moreover, that these innate patterns remain constant for life.

The picture illustrates that children differ in neuromuscular integration and development at birth, but neither the scenes nor the subtitles clarify the issue as to whether such differences are attributable to varying rates of intrauterine growth or simply to the length of time between conception and delivery. The final sections of the film show that a mother's attitudes toward her infant may be revealed in the way she nurses it, for example, with uncomfortable tension, with ambivalent overconcern or with affectionate warmth and mutual pleasure. A final somewhat adventitious subtitle informs all adults that "we must accept children as they are."

This film is suitable for showing to residents in pediatrics and students in medicine and psychology.

The photography and editing of this film are acceptable, but, as indicated, the classification of mothers and children into simple categories is arbitrary and possibly misleading.

Psychological Implications of Behavior During the Clinical Visit. 400 feet, showing time sixteen minutes. Produced in 1944.

The introductory sequences of this film show various ways in which mothers hold and nurse their infants, for example, with tense, mutual discomfort, with smothering physical effusiveness or with relaxed and protective warmth. Later scenes in the film show how the play activities of older children can express jealousy, hostility, avoidance of anticipated rejection, anxious possessiveness, compensatory identifications with other children or trusted adults or fearful withdrawal. A final subtitle somewhat redundantly confirms the fact that each child has a unique personality derived from his individual development and experiences.

This film may be useful as an adjunct for lectures to lay groups on maternal care and child development.

A Psychoneurosis with Compulsive Trends in the Making: Life History of Mary. 1,100 feet (4 reels), showing time forty-six minutes. Produced in 1947.

Lying-In Period.—The film begins by classifying its child heroine, Mary, as a "congenital active type" on the basis that startling stimuli even a few hours after birth produce crying and restless seeking. Mary's mother dislikes nursing her and is compulsive and ritualistic in her care. The contrast is heightened by interpolation in the film of scenes showing the nursing procedures of a truly affectionate mother, but the issue at this point is somewhat obscured by a series of subtitles giving arbitrary descriptions of the characteristics of other members of Mary's immediate family.

Mary's Life from 2 Weeks to 2 Years.—This section of the film shows how the infant Mary becomes increasingly insecure and tense as she senses her mother's ambivalence and is subjected to successive deprivation, such as early weaning and premature discipline. She turns to her father for help but, although he reciprocates her affection, she becomes a somber, anxious child whose main defenses against unhappiness consist of intellectual pretentions and channelized hyperactivity. Despite Dr. Fries' attempt to guide Mary's mother, Mary seems already to be fulfilling an earlier prognosis that she would develop an anxiety neurosis with obsessive-compulsive traits.

Mary from 2 to 7 Years.—During this age range Mary continues to show diminished frustration tolerances, in that she withdraws from play situations into ritualized activities or displaces her aggressions onto dolls or other inanimate objects. At times her overt hostilities break through into overt behavior, such as resistiveness to discipline or physical destructiveness, but for the most part she is an excessively inhibited, timid and compulsive child.

By the time Mary is 5 years old she has a decided handwashing compulsion and a susceptibility to disabling anxiety whenever her ritualistic habits are interfered with. Her posture is poor, and, despite her superior intelligence quotient, she is retarded in intellectual and motor development Her social development is correspondingly impaired, so that she has no friends and few of the skills and graces essential for group acceptance.

This film is a poignant documentary of the familial and childhood deprivations that can threaten the happiness and usefulness of a lifetime; moreover, it emphasizes how little can be done by child psychiatrists who, though aware of the concurrent tragedy, are not given the psychiatric and social means with which to alter the outcome.

The film is recommended for exhibition to students of medicine, nursing, social work and psychology as well as to lay groups interested in child behavior.

The Family Life of the Navaho Indians. 630 feet (2 reels), showing time twenty-six minutes. Produced in 1944.

This film records some of the child-rearing customs of a Navaho tribe. If the film has a point, it is that the Navaho infant though nearly always kept strapped into immobility on a cradle board derives great security from the continuous attentions showered on him by his mother and older siblings. The little Navaho girl is given duties about the hogan and the farm plot at an early age, whereas the Navaho boy is encouraged to acquire skill in horsemanship and native crafts. Both are thus made to feel accepted into the community when young, presumably for the good of all concerned.

The film is a pleasant documentary and may serve as a text for more penetrating discussions of cultural influences on personal and social development.

The Diagnosis and Treatment of Leukorrhea, A Clinical Presentation. 16 mm., sound, color, 1,400 feet (1 reel), showing time thirty-eight minutes. Prepared in 1947 with the cooperation of William Bickers, M.D., Richmond, Va. Produced by Springer. Sponsored by and procurable on loan from Ciba Pharmaceutical Products, Summit, N. J.

This film presents an outline of the etiologic aspects and treatment of leukorrhea. The various pathologic conditions of the cervix and vaginal mucosa as well as conditions which produce vaginal discharge and the underlying pathologic conditions are well illustrated. Several patients are shown, and the various forms of this condition and treatment are described for each case. Charts are used to depict the classification of cases of leukorrhea found in office practice.

This film has little teaching value, since a number of statements and presentations undoubtedly will be questioned by the more meticulous practitioners of gynecology. One is left with the impression that all vaginal discharges can be cured by insufflation with vioform® (5-chloro-7-iodo-8-hydroxyquinoline) and that such treatment is practically devoid of danger. The film might better have referred to "one method of treatment" instead of implying that "this is the treatment."

The color photography and narration are excellent.

The production is long, and judicious editing would be an improvement; for example, the scene of the patient walking to the physician's office is hardly necessary.

Cardiac Arrhythmias. 16 mm., color, silent, 600 feet (1 reel), showing time twenty-five minutes. Prepared in 1948-1949 by Robert Shuler, Ph.D., M.D., with assistance from Mark F. Hanch, M.D.; Richard Shaw, M.D., and David MacDougal, M.D., University of Chicago, Department of Physiology, Chicago. Procurable on loan from Abbott Laboratories, North Chicago, Ill.

The valuable portion of this film is the series of scenes showing the exposed canine heart in arrhythmias of various kinds, experimentally produced. These are supplemented by animated diagrams and by schematic electrocardiograms. The purpose of the film is to give the clinician a clearer understanding of arrhythmias that are observed in patients.

The animation of the spread of the excitation wave was extremely diagrammatic and sketchy and could be interpreted as inacurrate in at least three instances when the impulse was shown to travel (*a*) down the septum from the base to the apex and (*b*) up the walls of the ventricles from the apex to the base and (*c*) when the recession of the excitation wave was said to account for the T wave formation, whereas it is now considered by many that our previous acceptance of this possibility is no longer certain, although it might possibly be assumed, as a working hypothesis. The film correctly depicts auricular fibrillation as being caused by the activation of multiple foci in the auricles in accordance with a rather recent change in our understanding of the production of this arrhythmia. However, it is rather difficult to think of auricular fibrillation without recalling the older theory of "circus movement," and possibly this theory should have been mentioned.

The normal ryhthm, 2 to 1 and 3 to 1 heart block; auriculoventricular nodal rhythm; complete auriculoventricular block; auricular fibrillation and flutter; ventricular fibrillation, and paroxysmal ventricular tachycardia are shown. These arrhythmias are shown as they occur in experimental animals and are repeated with animation of the diagrammatic heart and the simultaneous production of the electrocardiogram. The animation was rather jerky over the auricles when traveling over the normal pathways. Auricular flutter was beautifully shown as a ripple of contraction continuously moving around the appendage of the left auricle. In the depiction of the electrocardiogram of ventricular fibrillation, a poor curve is used. Obviously a dog's heart in extremis was photographed and showed the fibrillatory movements well. In the photography representing paroxysmal ventricular tachycardia, the auricles were seen to be beating independently at a slower rate, which probably occurs only in the presence of complete heart block.

Most of the arrhythmias are mentioned. Ventricular escape is omitted, but the admixture of skimpy diagrams and the nearly complete coverage of the subject makes it difficult to know to whom the film is directed. Certainly this film is not for the medical student, because the sketchiness of the conduction system and the improper manner of spread of the excitation impulse are unsatisfactory.

The strongest point of the film is the excellent photography of the dog's heart.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Books: Admissibility in Evidence.—The defendant, charged with poisoning his wife with strychnine, was found guilty by a jury and convicted of murder in the first degree. From such conviction, he appealed to the Court of Appeals of New York.

Among other reasons cited by the Court of Appeals for requiring a new trial, it was held that the conviction would have to be reversed because of the trial court's ruling on the right of the defendant to cross examine one of the expert witnesses. When a toxicologist, a witness for the state, was being cross examined, the following questions were asked of him:

Q. Now, you said that you got part of your information or knowledge about toxicology from literature; is that right?

A. That's right.

Q. Did you ever read "Textbook of Physiology" by Howell?

A. I've glanced at it.

The trial court, without more, then ruled that if counsel wished to refer to any textbook or literature he must show it to the witness and that if the witness agreed with it and adopted it, the witness might then be questioned about it. The trial court said, " . . . I shall not permit you to read from that book or any other book.' If you wish to question this witness regarding any material, any writing, any dissertation or questions or statements contained in that book, you will first refer to the witness; let him read it, and, if the witness replies that he is in agreement with it or that he adopts that argument as his own, then I will allow you to make reference to it. Otherwise, not." Later during the same discussion the trial court repeated the ruling as follows: " . . . you will first refer the book to this witness, and, if the witness tells the Court that he is in agreement with that statement or that writing and adopts that argument as his own, you may then question him regarding such statement or such argument. Otherwise I shall exclude it."

In this state, said the Court of Appeals, when an expert witness has given opinion testimony and on cross examination has tesified that a book called to his attention is recognized by him as an authority on the subject on which he has given an opinion, he may be confronted with a passage from the book which conflicts with the opinion he has expressed. This is permitted for the purpose of discrediting or weakening his testimony. In a prior New York case it was said: " . . it has been the custom, in this state at least, to call the attention of expert witnessess, on cross examination, to books on the subject and ask whether or not authors whom he admitted to be good authority had not expressed opinions different from that which was given by him upon the stand. The reference to books in such cases is not made for the purpose of making the statements in the books evidence before a jury, but solely for the purpose of ascertaining the weight to be given to the the tesimony of the witness."

Accordingly the defendant's conviction was reversed and a new trial ordered. *People v. Feldman 85 N. E. (2d) 913 (New York, 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

19:301-400 (April) 1949

SYMPOSIUM ON THE CYTOLOGIC DIAGNOSIS OF CANCER

Cytologic Diagnosis of Uterine Cancer by Examination of Vaginal and Uterine Secretions. G. N. Papanicolaou.—p. 301.
Cytologic Diagnosis of Cancer from Pleural and Peritoneal Fluids. O. Saphir.—p. 309.
Cytologic Diagnosis of Carcinoma of the Prostate. P. A. Herbut. —p. 315.
*Tumor Cells in Bronchial Secretions: Experimental and Statistical Study. M. Appel and T. T. Bronk.—p. 320.
Cytohistologic Study of Bronchial Secretions. H. L. Richardson, W. C. Hunter, W. S. Conklin and A. B. Petersen.—p. 323.
*Cytohistologic Diagnosis of Material Aspirated from Stomach; Accuracy of Diagnosis of Cancer, Ulcer and Gastritis from Paraffin-Embedded Washings. H. L. Richardson, F. B. Queen and F. H. Bishop.—p. 328.

Tumor Cells in Bronchial Secretions.—Appel and Bronk report a woman aged 58 with paroxysmal attacks of dyspnea, associated with cough and loss of weight. Repeated roentgenographic examinations of the chest did not reveal a neoplasm. Bronchoscopy showed no evidence of tumor. Clusters of tumor cells were observed in secretions obtained from the right main bronchus and stained by the Papanicolaou technic. Pneumonectomy was performed. Careful dissection of the bronchial tree revealed a small area of thickening occluding a tertiary division of the right bronchus. Microscopic sections of this area showed papillary projections of a primary carcinoma arising in the bronchial mucosa. Despite the small size of the primary tumor, there was sufficient exfoliation of tumor cells to make them readily recognizable in the bronchial secretions before there was any definite clinical, roentgenologic or bronchoscopic evidence of tumor. Experiments on 30 rabbits in which pulmonary carcinomas were produced by transplantation of a tumor of the testis of the rabbit revealed exfoliated cells in the bronchial secretions in all the animals. In 17 animals tumor cells could be found in the bronchial secretions before the tumor was grossly recognizable and at a stage at which neither roentgen examination nor bronchoscopy could have identified the growth.

Cytohistology of Gastric Washings.—Richardson and co-workers embedded in paraffin and sectioned material from 297 gastric aspirations obtained from 235 patients. The sections contained not only isolated cells but also frequently minute fragments of tissue. Consequently, the term "cytohistologic" was applied to this method of diagnosis. In 136 patients the clinical diagnosis was not established beyond doubt, while 99 patients had proved lesions. In 78 of the latter group the diagnosis was proved at operation or autopsy, or by clinical observations and course. The proved diagnosis was compared with the cytohistologic diagnosis. The criteria for the cytohistologic diagnosis of cancer were clusters of enlarged, irregular cells with hyperchromatic nuclei and prominent nuclei; those of ulcers were fibrin mass containing enmeshed leukocytes; those of acute gastritis were many intracytoplasmic granulocytes in mucosal epithelium. Twenty-seven patients had proved cancer. In 13 the disease was originally diagnosed cytohistologically as cancer. On review of the sections, a total of 18 were given a diagnosis of cancer. A false-positive diagnosis of cancer was made in 2 patients. Twenty-four patients had proved ulcers. In 20 the diagnosis of ulcer was made from the microscopic examination. A false-positive diagnosis of ulcer was made in 3 patients. Nine patients had proved gastritis. Six were given the diagnosis of gastritis. A false-positive diagnosis of gastritis was made in 3 patients. Eighteen patients were proved to have no gastric lesions. In 11 this had been the diagnosis. Six persons were incorrectly called normal. The embedded section technic presents certain advantages over the smear technic, important among which are the concentration of material and the better preservation of cellular relationships.

American Journal of Diseases of Children, Chicago

76:227-364 (Sept.) 1949

Diagnostic Application of Study of Bone Marrow in Infants and in Children. H. G. Poncher.—p. 227.
Gargoylism: II. Study of Pathologic Lesions and Clinical Review of 12 Cases. S. Lindsay, W. A. Reilly, T. J. Gotham and R. Skahen. —p. 239.
Experimental Toxoplasmosis: I. Transmission of Infection in Utero and Through Milk of Lactating Female Mice. H. Eichenwald.—p. 307.

American Journal of Medical Sciences, Philadelphia

217:361-474 (April) 1949

*Why Are Fever Temperatures Over 106 F. Rare? E. F. DuBois. —p. 361.
*Major Surgical Operations in Presence of Bundle Branch Block: Study of Operative Risk in 59 Patients. P. H. Pfeiffer and J. S. La Due. —p. 369.
Effect of Roentgen Radiation on Production of Thoracic Duct Lymphocytes. W. N. Valentine, C. G. Craddock and J. S. Lawrence.—p. 379.
Congenital Hemolytic Jaundice in a Negro Family. J. Churg and M. Rosenbaum.—p. 383.
Blood Volume Studies in Middle-Aged and Elderly Males. J. E. Cohns and N. W. Shock.—p. 388.
Heart in Funnel-Shaped and Flat Chests. A. M. Master and J. Stone. —p. 392.
Value of Laboratory in Diagnosis of Poliomyelitis. M. J. Fox and H. E. Wallace.—p. 401.
Electro-Narcosis: Results in 125 Patients with Psychosis or Psychoneurosis. D. Goldman.—p. 405.
Studies upon Relation Between Plasma Antithrombin and Heparin. I. Influence of Plasma Antithrombin on Prothrombin Time. C. A. Tanturi and N. C. Wetzel.—p. 410.
Effect of Streptomycin on Blood Clotting Time and Prothrombin Time in Man. L. Elson.—p. 421.
Control of Dicumarol Therapy. J. H. Olwin.—p. 427.
Prognosis of Pneumonia. W. W. G. Maclachlan, M. M. Bracken and W. R. Bailey Jr.—p. 438.
Effect of Liver Dysfunction on Response to Dicumarol. E. H. Reisner Jr., J. Norman, W. W. Field and R. Brown.—p. 445.
Clinical Evaluation of New Liver Function Test, Colloidal Red Test, in Comparison with Thymol Turbidity Test. H. A. Strade and L. B. Dotti.—p. 448.
Treatment of Scleroderma. H. Beerman and J. H. Stokes.—p. 453.
The Overmedicated Nasal Cavity. N. D. Fabricant.—p. 462.

Fever Temperatures.—According to DuBois there is still much to be learned about temperature regulation in health and even more about fever. Little is known regarding the details of the chemical, electrical and physical reactions which occur in the hypothalamus and skin in response to changes in temperature. It is by delicate adjustments in these tissues that the balance between heat loss and heat production is maintained. A survey was made of 1,761 temperature readings in 357 patients suffering from diseases characterized by high grade fever. Only 4.3 per cent of the temperatures were above 106 F. (41.1 C.) None was above 107.8 F. (42 C.). In these fevers 608 readings were between 104 and 105 F. (40.0 to 40.6 C.). Less than half as many fell between 102 and 103 F. (38.9 to 39.4 C.). These are indications that in these fevers the "thermostat level" for the temperature-regulating mechanism was set in the neighborhood of 104 and 105 F. Temperatures much higher than 106 F. can be found in several conditions other than infectious diseases. The normal temperature-regulating mechanism may be overwhelmed suddenly by a fever cabinet or gradually by heat stroke with its exhaustion of the sweat glands. The mechanism together with the peripheral circulation often fails in moribund patients. Except for these anomalous conditions temperatures are kept safely below the danger level by an "emergency regulatory mechanism in fever" which acts chiefly through the peripheral circulation and the sweat glands.

Surgical Operations in Presence of Bundle Branch Block.—Pfeiffer and La Due investigated the surgical risk in 59 patients with bundle branch block who were subjected to major operations. Two patients died ten and sixteen days postoperatively of medical complications, a 3.3 per cent operative mortality to which the presence of heart disease presumably contributed. The total operative mortality, including strictly surgical complications, was 10 per cent. Although it was not possible to get a comparable series of patients of the same average age (66.6 years) as the patients studied, the authors were able to obtain the operative mortality statistics on 260 patients 70 and 71 years of age who underwent subtotal gastric resections. In these 260 patients the average mortality was 3.4 per cent. Thus the presence of bundle branch block in itself does not constitute a contraindication to surgical intervention. Careful classification of heart disease and study of the functioning of other systems are of greater importance in evaluating operative risk. Postoperative complications did not appear to be more frequent or severe than might be expected for a comparable group of patients in the same age group.

American Journal of Physiology, Baltimore

156:1-136 (Jan.) 1949

Comparative Effects on Circulatory System of Positive and Negative Accelerations: Marey "Law." S. W. Britton.—p. 1.

Estimation of Relative Corpuscle and Serum Volumes in Blood by Various Applications of Dilution Principle. P. L. McLain and C. H. W. Ruhe.—p. 12.

Studies in Intracardiac Electrography in Man: III. Displacement of Cardiac Pacemaker. H. D. Levine, H. K. Hellems, J. W. Dow and J. F. Gowdey.—p. 19.

Acute Effects upon Lungs of Dogs of Large Intravenous Doses of Alpha-Naphthyl Thiourea (ANTU). C. K. Drinker and E. Hardenbergh.—p. 35.

Effect of Anoxic Anoxia on Myoglobin Concentration in Striated Muscle. W. E. Poel.—p. 44.

Efficiency of Various Types of Artificial Respiration at High Altitudes. F. R. Blood and F. E. D'Amour.—p. 52.

Further Observations on Depression of Renal Function Following Hypophysectomy. H. L. White, P. Heinbecker and D. Rolf.—p. 67.

Nephro-Omentopexy, Compensatory Renal Hyperfunction and Parallel Measurements of Renal Dynamics. N. S. R. Maluf.—p. 79.

Lactic and Pyruvic Acids in Blood After Glucose and Exercise in Diabetes Mellitus. M. K. Horwitt, O. W. Hills and O. Kreisler. —p. 92.

Possible Role of Skin in Effect of Adrenalin on Body Temperature and Respiratory Metabolism. C. E. Whitcher and F. R. Griffith Jr. —p. 114.

Experimental Production of Electrical Major Convulsive Patterns. A. M. Freedman, P. D. Bales, A. Willis and H. E. Himwich.—p. 117.

Di-Isopropyl Fluorophosphate: Site of Injection and Variation in Response. A. M. Freedman and H. E. Himwich.—p. 125.

Water, Nitrogen and Electrolyte Content of Brain Following Cerebral Concussion. L. Eichelberger, J. J. Kollros and A. E. Walker. —p. 129.

American Journal of Psychiatry, New York

105:721-800 (April) 1949

Role of Medical Administration of Psychiatric Hospital Treatment. W. L. Russell.—p. 721.

*Transorbital Lobotomy. W. Freeman.—p. 734.

New Instrument for Performing Transorbital Leukotomy. M. T. Moore. —p. 741.

*Frontal Lobotomy: Clinical Experience with 107 Cases in State Hospital. J. E. Oltman, B. S. Brody, S. Friedman and W. F. Green. —p. 742.

Effects of Prefrontal Lobotomy on Symptomatology of Schizophrenic Patients: Survey of 100 Cases. D. Rothschild and A. Kaye.—p. 752.

Rating Scale Analysis of Clinical Effects of Lobotomy. S. L. Sands and W. Malamud.—p. 760.

Current Evaluation of Anticonvulsant Drugs. R. N. DeJong.—p. 767.

Practice of Psychiatry in Rural Community. J. Sirkin.—p. 775.

Reactions of Children to Highly Publicized Crime Against Child. S. S. Sloman.—p. 779.

Transorbital Lobotomy.—Transorbital lobotomy was originally proposed by Fiamberit in 1937. Preliminary studies on cadavers convinced Freeman that transorbital lobotomy is simple and quick. He employed this method on 10 patients early in 1946. The total number operated on by the transorbital method under his supervision has been about 100. Convalescence is rapid, many patients being discharged within a week. Some never manifest any improvement, and a few of these have subsequently undergone standard prefrontal lobotomy with good results. Although not all patients have been benefited, none has suffered aggravation of the mental condition as the result of the operative procedure. It has been particularly gratifying to find preservation of normal personality patterns in patients who have recovered. None of the inertia, indifference and indolence has been manifested; nor has there been the tactless, explosive or outspoken behavior noted so frequently following prefrontal lobotomy. Sometimes the adaptation of the patients is better than it was in their prepsychotic state. Transorbital lobotomy accomplishes much the same effect as topectomy of areas 9 and 10, in that it abates the psychosis without producing any undesirable personality changes. Transorbital lobotomy is simple, quick and safe. It is recommended particularly to psychiatrists in mental hospitals where major neurosurgical procedures are not available. Transorbital lobotomy under electroconvulsive shock should be undertaken when active therapy fails or is about to be replaced by "maintenance therapy." It should be definitely understood that the procedure is a minor one and that some patients may later require major lobotomy for permanent relief.

Frontal Lobotomy.—Oltman and associates review observations in 107 cases in which frontal lobotomy was performed at the Fairfield State Hospital in Newton, Conn. The group was composed almost entirely of patients with chronic mental illness whose prognosis seemed extremely unfavorable; 85 per cent were schizophrenic. The average duration of mental illness was 7.4 years and of hospitalization, 4.4 years prior to operation. The results following lobotomy have been encouraging: 56.7 per cent of the entire group exhibited significant improvement; thus far, 37.4 per cent have been able to leave the hospital. The mortality rate was low; complications, except for convulsive seizures, have been relatively infrequent. Results were best in the nonschizophrenic group, next best in the paranoid, catatonic and mixed types of schizophrenia, and poorest in simple and hebephrenic dementia praecox. Disturbed, aggressive, combative and hostile patients appeared to receive maximum benefit. Duration of illness had relatively little significance as a prognostic guide. Lobotomy may be especially helpful in patients who have pulmonary tuberculosis, which is a contraindication to shock therapy. There is no reduction of intellectual functioning after the operation.

American Review of Tuberculosis, New York

59:223-352 (March) 1949

Chemotherapeutic Measures in Tuberculosis: General Assessment and Current Problems. P. D'A. Hart.—p. 223.

Thoracoscopy and Closed Intrapleural Pneumonolysis. O. C. Brantigan. —p. 240.

Diagnostic Problem of Primary Pleural Effusions. J. R. Kraft.—p. 259.

Pulmonary Emphysema and Ventilation Measurements in 100 Anthracite Coal Miners with Respiratory Complaints. H. L. Motley, L. P. Lang and B. Gordon.—p. 270.

Management of Tuberculosis in Psychotic Patients. L. O. Lambiotte, E. L. Washington and G. S. Bozalis.—p. 289.

Fulminant Tuberculous Septicemia with Leukopenia. W. Pagel and A. L. Woolf.—p. 311.

Agranulocytosis During Streptomycin Treatment of Miliary Tuberculosis: Report of Case. D. D. Feld.—p. 317.

Direct Method of Standardizing Dilute Suspensions of Tubercle Bacilli by Use of Capillary Micropipette. W. D. Crandall.—p. 325.

Factors Affecting Sensitivity in Vitro of Tubercle Bacilli to Streptomycin. Elizabeth H. Williston and G. P. Youmans.—p. 336.

Anesthesiology, New York

10:125-246 (March) 1949

Studies of Circulation of Anesthetized Patients by New Method for Recording Arterial Pressure and Pressure Pulse Contours. K. F. Eather, L. H. Peterson and R. D. Dripps.—p. 125.

*Utility of Intravenous Procaine in Anesthetic Management of Cardiac Disturbances. C. L. Burstein.—p. 133.

Venous Pressure in Relation to Blood Volume in Man. M. E. Anderson Jr. and J. S. Lundy.—p. 145.

Some Observations upon Effect of Certain Anesthetic Agents on Uterine Motility During Labor. J. P. Howard, V. Balovich, C. G. Collins and J. Adriani.—p. 151.

On Learning Anesthesia. W. Bourne.—p. 157.

Effects of Premedication upon Signs of Asphyxia During Nitrous Oxide-Oxygen Anesthesia. C. R. Allen, R. S. Echols, K. C. O'Neal and H. C. Slocum.—p. 164.

*Therapeutic Uses of Intravenous Procaine. D. J. Graubard and M. C. Peterson.—p. 175.

Blood Transfusion Reactions: Their Etiology, Prevention and Treatment. S. J. Wilson.—p. 188.

Some Suggestions for Conduct of Continuous Spinal Anesthesia. W. E. Brown.—p. 193.

Use of Cell Suspensions to Determine Cytotoxicity of Local Anesthetics. L. A. Gittelson.—p. 202.

Effectiveness and Toxicity of Methadon, a New Analgesic Agent. R. C. Batterman and A. M. Oshlag.—p. 214.

Intravenous Procaine in Cardiac Disturbances During Anesthesia.—Burstein administered 100 mg. of procaine hydrochloride in 1 per cent solution to 4 patients, 2 men aged 27 and 40 years, respectively, and 2 women aged 43 and 69, respectively, for combating cardiac disturbances during general anesthesia for pericardiectomy, thyroidectomy and inguinal hernioplasty.

Procaine, a local anesthetic drug but a central nervous system stimulant, tends to diminish the cardiac hyperirritability produced by general anesthetic agents. It rendered an irregular pulse regular in 2 patients, diminished tachycardia and hypertension to normal limits in 1, and returned bradycardia and hypotension to normal limits in 1. But it is no cure-all and has its limitations. Six reports from other clinics substantiate the observations of the author. Two patients recovered from ventricular fibrillation following the intravenous injection of procaine hydrochloride. Intravenous use of procaine hydrochloride is also recommended as a prophylactic measure to minimize cardiac disturbances during general anesthesia. Results in 2 men who were aged 60 and 68 showed that with this technic cyclopropane may be administered to patients with preexisting cardiac disease without the manifestation of any apparent deleterious cardiovascular effects. Instantaneous recording electrocardiography is suggested as a helpful addition to the armamentarium of the anesthesiologist. The importance of proper diagnosis of cardiac arrhythmias is stressed.

Therapeutic Uses of Intravenous Procaine.—Graubard and Peterson employed intravenous administration of procaine hydrochloride as a safe hospital procedure under controlled conditions in a series of 448 cases in which 1,954 infusions of the drug were given in one year without morbidity or mortality. There were 224 patients with traumatic conditions, including 31 with fractures treated after reduction, 36 with low back pain due to myofascitis and 33 with reflex sympathetic dystrophy, in whom the results obtained with the drug in the management of pains were uniformly good. There were 194 patients with inflammatory conditions. Intravenous administration of procaine hydrochloride in conjunction with vitamin C provided persistently good results in arthritis, but the drug is still considered in the investigative stage. The improvement noted in patients with spastic conditions of neurologic origin recommends this form of treatment for further clinical study. Results with procaine hydrochloride seemed superior to those obtained with curare. Procaine hydrochloride is an adjuvant in the treatment of selected, traumatic, inflammatory and spastic conditions.

Annals of Internal Medicine, Lancaster, Pa.

30:495-712 (March) 1949

Q Fever—Review of Current Knowledge. R. J. Huebner, W. L. Jellison and M. Dorthy Beck.—p. 495.
*Clinical Aspects of Q Fever in Southern California; Study of 80 Hospitalized Cases. R. B. Denlinger.—p. 510.
Cough as Symptom of Cardiovascular Disease. J. H. Currens and P. D. White.—p. 528.
Prevention of Recurrences in Peptic Ulcer. T. L. Althausen.—p. 544.
Visceral Thrombophlebitis Migrans. I. S. Gerber and M. Mendlowitz.—p. 560.
*Conditioned Reflex Treatment of Chronic Alcoholism. X. Analysis of 3,125 Admissions Over a Period of Ten and a Half Years. W. L. Voegtlin and W. R. Broz.—p. 580.
*Liver Function and Serum Protein Structure in Gout. W. Q. Wolfson, C. Cohn, R. Levine and others.—p. 598.
Transient "O" Diastolic Blood Pressure (Indirect) in Upper Extremities. I. Stein.—p. 615.
Intermittent Dosage Schedules of Streptomycin with Resultant Prolonged Sensitivity of M. Tuberculosis. V. F. Deyke, M. W. Fisher, L. A. James and L. J. Sides.—p. 619.
Recent Advances in Study of Arteriosclerosis. S. O. Waife.—p. 635.

Clinical Aspects of Q Fever in California.—According to Denlinger, Q fever has been occurring in the general population of Southern California. Eighty hospitalized patients were selected for clinical study. Of this number, one third denied exposure to cattle or unpasteurized milk. Eighty per cent of the patients were adult males. The commonest symptom complex was that of a sudden onset of fever, sensations of chilliness, malaise, anorexia and severe headache followed in a few days by a slight hacking cough and mild pleuritic chest pain. The patients were febrile, had a relative bradycardia and appeared acutely ill. Localizing physical observations were indicative of pneumonia or meningism or were entirely lacking. The fever persisted from seven to fifteen days and subsided by lysis. Convalescence was usually rapid and complete but was occasionally prolonged. Two patients had mild relapses requiring their rehospitalization. The results of therapy with penicillin, sulfonamide compounds, roentgen radiation, streptomycin and para-aminobenzoic acid were inconclusive. Aureomycin was not used in the treatment of these patients. The blood counts were variable but commonly revealed a mild polymorphonuclear leukocytosis and lymphocytopenia. The erythrocyte sedimentation rate was elevated in every case. The spinal fluid was normal except for some increase in pressure and slightly decreased chloride content. Reactions to Proteus OX 19 and cold agglutination tests were negative. Roentgenograms of the chest showed infiltrations in the majority of cases, usually a uniform segmental or lobular consolidation. The complement fixation test for Q fever became positive during the second week of illness. The final diagnosis of Q fever was dependent on this test in every instance.

Conditioned Reflex Treatment for Chronic Alcoholism.—Voegtlin and Broz analyzed data concerning 3,125 patients admitted to the Shadel Sanitarium in Seattle for the treatment of chronic alcoholism. A series of 2,323 cases of treatment by the conditioned reflex has been subjected to statistical evaluation. Conditioning procedures, when used alone, will cause 85 per cent of chronic alcoholic patients to remain abstinent for six months or longer; 70 per cent will remain abstinent for one year or longer; 60 per cent will remain abstinent for two years or longer; 55 per cent will remain abstinent three years or longer; 40 per cent will remain abstinent four years or longer; over 30 per cent will remain abstinent for seven years or longer, and about 25 per cent will remain abstinent ten and a half years or longer. The value of conditioning therapy has been proved by these data. Adjuvant methods, such as psychotherapy, social service and rehabilitation, and physical rejuvenation should enhance the results when these measures are combined with conditioning methods, but this, as yet, has not been proved. The struggle against chronic alcoholism requires the use of every weapon of proved value. Conditioning technics should be thoroughly mastered and incorporated into existing therapeutic plans.

Liver Function and Serum Protein Structure in Gout.—Wolfson and co-workers studied serum protein partition to check tests which depend primarily on serum globulin structure and to aid in comparing changes in gout with those reported in rheumatoid arthritis. Forty-three patients were classified in four groups: (1) interval gout, (2) acute and subacute gouty arthritis, (3) chronic gouty arthritis and (4) gout with known complicating disease. They found that results of sensitive liver function tests indicate that gout is not uniformly associated with functional hepatic impairment. Diffuse disease of the liver can therefore be neither the cause of gout nor a uniform consequence of gout. Abnormal reactions to liver function tests are infrequent in uncomplicated interval gout. Most of the abnormalities are found to occur in patients with known complicating disease, and in these patients the degree of functional hepatic impairment is commensurate with the nature and severity of the associated disease. Diffuse hepatic involvement and alterations in circulating protein are not fundamental to the pathogenesis of gout.

Archives of Internal Medicine, Chicago

83:119-248 (Feb.) 1949

*Epidemiologic Aspects of Thyrotoxicosis. E. Meulengracht.—p. 119.
*Lymphosarcoma of Gastrointestinal Tract: Report of 21 Cases. M. A. Spellberg and S. Zivin.—p. 135.
Circulatory and Diuretic Effects of Theophylline Isopropanolamine. D. M. Fowell, J. A. Winslow, V. P. Sydenstricker and N. C. Wheeler.—p. 150.
Experimental Pulmonary Infarction: Abnormal Pulmonary Circulation as Prerequisite for Pulmonary Infarction Following an Embolus. D. W. Chapman, L. J. Gugle and P. W. Wheeler.—p. 158.
Acute Phosphorus Poisoning. H. J. Rubitsky and R. M. Myerson.—p. 164.
Infectious Mononucleosis with Neurologic Complications: Report of Fatal Case. V. B. Dolgopol and G. S. Husson.—p. 179.
Syphilis: Review of Recent Literature. H. A. Tucker, C. F. Mohr, R. D. Hahn and J. E. Moore.—p. 197.

Thyrotoxicosis.—Meulengracht states that during the years 1941 to 1945 there occurred a striking epidemic of thyrotoxicosis in Denmark. He reviews earlier observations on the epidemic occurrence of thyrotoxicosis. In Norway there was a genuine epidemic in the years 1941 to 1943. In France, but apparently confined to Paris, there was an epidemic in the years 1941 to 1944, with its peak in 1942 to 1943. The number of patients admitted to the public hospitals in Paris rose to three or four times what it had been in the years immediately before. The author considers various factors that may cause a temporary rise in frequency and advances the hypothesis that a specific infective agent may be the cause of such epidemics.

Lymphosarcoma of Gastrointestinal Tract.—Spellberg and Zivin believe that lymphosarcoma of the gastrointestinal tract is of interest not only because of its rarity but because of the diagnostic difficulties and its difference in therapeutic response from other malignant lesions of the gastrointestinal tract. In 11 of the 21 cases reviewed by the authors the primary lesion was in the stomach; in the remaining 10 it was in the intestine. There are 88 cases of gastric carcinoma for each case of gastric lymphosarcoma. Roentgenologic examination usually fails to establish a diagnosis; gastroscopic examination may be of help. The prognosis of the small cell type of lymphosarcoma is better than that of the reticulum cell type. Resection followed by irradiation is the treatment of choice. The prognosis of gastric lymphosarcoma appears to be better than that of gastric carcinoma. Of the 10 cases of primary intestinal lymphosarcoma which were observed between 1931 and 1946, in 5 cases the lesions were located in the small intestine and in 5 in the large intestine. Three hundred colonic carcinomas were seen for each lymphosarcoma, which shows that this neoplasm is extremely rare in the colon. Intestinal lymphosarcoma appears to carry an extremely poor prognosis; no patient survived five years and most died in less than six months.

Archives of Neurology and Psychiatry, Chicago

61:99-226 (Feb.) 1949

Interpretation of Electromyogram. D. Denny-Brown.—p. 99.
Spasmodic Torticollis: I. Physiologic Analysis of Involuntary Motor Activity. E. Herz and P. F. A. Hoefer.—p. 129.
Chronic Rheumatic Encephalitis, Torsion Dystonia and Hallervorden-Spatz Disease. C. E. Benda.—p. 137.
Acid Phosphatase in Senile Brain. H. Josephy.—p. 164.
Efficacy of Brief Clinical Interview Method in Predicting Adjustments: Five Year Follow-Up Study of 304 Army Inductees. J. A. Aita.—p. 170.
Folie à Deux (Psychosis of Association). E. Ascher.—p. 177.
Optokinetic Response and Intracranial Lesions. D. G. Cogan and D. R. Loeb.—p. 183.
*Effects of Electroconvulsive Therapy on Diuretic Response to Water in Psychotic Patients. M. D. Altschule and K. J. Tillotson.—p. 188.
Tetraethylammonium Chloride in Treatment of Herpes Zoster and Intercostal Neuralgia. R. L. Fisher, M. Zukerman and D. J. Sweeny Jr.—p. 194.
Neurologic Manifestations Associated with Vitamin A Deficiency in Young Ducks: Clinical and Pathologic Study. D. E. Fletcher and R. H. Rigdon.—p. 199.

Electroconvulsive Therapy and Diuretic Response to Water.—Altschule and Tillotson say that earlier observations in their laboratory revealed that water retention occurs in association with the rapid gain in weight shown by patients who improve during the course of electroshock therapy. Stimulation of the posterior lobe of the pituitary consequent to hemoconcentration or to severe muscular effort, both of which occur during electrically induced convulsions, may cause liberation of antidiuretic hormones. The effect of steroid hormones is to cause salt and water retention. The action of these hormones is apparently increased during electroshock therapy. Since hormones of the posterior lobe of the pituitary inhibit water diuresis, a study of the diuretic response to water before and after electroshock therapy might help in the evaluation of the possible role of hormonal factors in causing the changes in water content of the tissues which result from this treatment. Sixteen patients ranging in age from 19 to 73 years were studied. Depressed patients who had not been treated or who were in relapse might show retarded diuresis after the ingestion of water, and patients with schizophrenic syndromes might exhibit abnormally accelerated and excessive diuretic responses. After electroconvulsive therapy the diuretic response to water was accelerated in all patients who gained weight as a result of treatment and was not accelerated in those whose weight was unchanged. It is concluded that the gain in weight previously shown to be associated with retention of water is not a consequence of increased activity of antidiuretic substances. It should not be concluded, however, that stimulation of the posterior lobe of the pituitary does not occur at all as a consequence of electroshock therapy. The data show only that if such *stimulation of the posterior lobe does occur it is not sufficient* to result in retardation of the diuretic response to water.

Archives of Otolaryngology, Chicago

49:125-242 (Feb.) 1949

*Abscess of Frontal Lobe Secondary to Ethmoiditis. J. H. Kler.—p. 125.
Surgery of the Chronically Discharging Ear. H. P. House.—p. 135.
*Ménière's Syndrome: Observations on Vitamin Deficiency as Causative Factor; I. Vestibular Disturbance. M. Atkinson.—p. 151.
Esophageal Varices in Banti's Disease: Report of Two Cases in Which Condition Was Improved with Injection of Sclerosing Solutions. R. B. Lewy.—p. 175.
Otosclerosis Associated with Osteoporosis and Labyrinthitis Chronica Ossificans. H. Brunner.—p. 184.
Unusual Otitic Foreign Bodies: Report of Two Cases. W. C. Warren Jr. and T. E. Bivins.—p. 196.
*p*H of Cutaneous Surface of External Auditory Canal: Study of Twenty-Seven Infants, Forty-Four Children and Sixty Adults. N. D. Fabricant and M. A. Perlstein.—p. 201.
Progress in Surgery of Septum. R. Kayser.—p. 210.

Abscess of Frontal Lobe and Ethmoiditis.—Kler reports 1 case of acute abscess of the frontal lobe resulting from an infection of the upper respiratory tract followed by ethmoidal empyema and periorbital abscess in a child aged 5, and 2 cases of chronic abscess of the frontal lobe resulting from a low grade chronic ethmoiditis of many years' duration in 2 men. The brain abscess in the first case was the result of an acute and virulent infection to which the patient had not been able to develop an adequate resistance. It is found, as a rule, as a complication of acute ethmoiditis. Chronic infection in the ethmoid sinuses, as in the 2 other cases, is the principal cause of brain abscess of ethmoid origin. The extension of the infection is by contiguity, either by osteitis, causing local necrosis with subsequent local meningitis, encephalitis and formation of subcortical abscess, or by thrombophlebitis of any of the veins communicating with the dura. Complications of acute ethmoiditis are more frequent and more easily diagnosed than those of the chronic infection. Chronic abscess of the brain as a complication of chronic ethmoiditis is an encapsulated abscess that gives few general or localizing signs. Papilledema was the most constant observation. Headache is a late symptom, and one that should be regarded as a danger signal. Electroencephalography is an invaluable aid in the diagnosis of this type of intracranial complication. The assistance of the neurosurgeon in the management of these cases is essential.

Ménière's Syndrome.—Atkinson studied 87 patients between the ages of 23 and 62, who had Ménière's syndrome with the triad of acute paroxysmal vertigo, deafness and tinnitus, from the standpoint of deficiency in the three major components of the vitamin B complex, nicotinic acid, riboflavin and thiamine. The responses of the patients to a standard dose of histamine diphosphate administered intradermally were recorded; the types of vertigo of which the patients complained were noted and a chart was kept of the symptoms generally accepted as accompanying certain vitamin deficiencies. Results showed that patients with Ménière's syndrome experience two distinct types of vertigo, rotational and positional, which are associated with different and specific vitamin deficiencies. Twenty patients who experienced rotational vertigo alone showed signs of nicotinic acid deficiency in the tongue, gave a small response to histamine and were relieved of their attacks with nicotinic acid. Twenty-four patients experienced positional vertigo alone, showed signs of riboflavin deficiency in the tongue, the eyes and the skin, gave a large response to histamine and were relieved of their attacks with riboflavin. Forty-three patients, the majority, experienced both kinds of vertigo and showed signs of deficiency of two fractions of the vitamin. They gave an intermediate response to histamine and were relieved of their attacks only if the two fractions were administered. Other symptoms common in patients with Ménière's syndrome can be related to other deficiencies; the fatigue, irritability and palpitations associated with thiamine deficiency may be relieved by administration of the appropriate vitamin. The therapeutic doses of the vitamins were considerably larger than those usually advocated. The full dose must be arrived at gradually, starting with small doses given parenterally and orally and increasing the doses slowly until the attacks are controlled.

Archives of Pathology, Chicago

46:401-502 (Nov.) 1948

Aging Processes in Ovaries of Mice Belonging to Strains Differing in Incidence of Mammary Carcinoma. L. Loeb.—p. 401.
Effects of Folic Acid Antagonists Inoculated in Embryonate Eggs. P. F. Wagley and H. R. Morgan.—p. 441.
Cholesterol of Human Adrenal Gland: Its Significance in Relation to Adrenal Function and Structure. W. F. Rogers Jr. and R. H. Williams.—p. 451.
Reticulum Cell Sarcoma of Bone. V. R. Khanolkar.—p. 467.
Neoplastic Diseases of Dogs: II. Mast Cell Sarcoma, Lymphosarcoma, Histiocytoma. R. M. Mulligna.—p. 477.
Fatal Viral Hepatitis Complicated by Phlegmonous Cecitis and Ileocecal Intussusception. W. Umiker.—p. 493.
Method for Biopsy of Bone Marrow of Experimental Animals. H. B. Ritter and J. J. Oleson.—p. 498.

Bulletin of Johns Hopkins Hospital, Baltimore

84:285-408 (April) 1949

Relation of Potassium to Neurologic Manifestations of Hypocalcemic Tetany. F. L. Engel, S. P. Martin and H. Taylor.—p. 285.
Investigation into Presence of Antibodies and Hypersensitivity in Encephalitis Produced Experimentally by Injection of Homologous Brain Suspensions. K. R. Hill.—p. 302.
Anti-Pneumococcal Powers of Blood in Alloxan Diabetes in Rabbit. A. H. Cruickshank and T. P. B. Payne.—p. 334.
Effect of Exercise on Renal Mechanism of Electrolyte Excretion in Normal Subjects. A. A. Kattus, B. Sinclair-Smith, J. Genest and E. V. Newman.—p. 344.
Renal Mechanism of Electrolyte Excretion and Metabolic Balances of Electrolytes and Nitrogen in Congestive Cardiac Failure; Effects of Exercise, Rest and Aminophyllin. B. Sinclair-Smith, A. A. Kattus, J. Genest and E. V. Newman.—p. 369.

Cancer Research, Baltimore

9:193-256 (April) 1949. **Partial Index**

Adrenal Medullary Tumors (Pheochromocytomas) in Mice. F. W. Smith, W. U. Gardner, Min Hsin Li and H. Kaplan.—p. 193.
Histopathologic Study of Mode of Inhibition of Cellular Proliferation by Urethane: Effect of Urethane on Walker Rat Carcinoma 256. J. W. Green Jr. and C. C. Lushbaugh.—p. 199.
Preparation and Properties of Mitochondria and Submicroscopic Particles of Normal and Leukemic Mouse Organs. R. B. Alfin-Slater, A. M. Larack and M. L. Petermann.—p. 215.
Effect of Walker Carcinoma 256 on Total Lipid Content of Rats. G. B. Mider, C. D. Sherman Jr. and J. J. Morton.—p. 222.
Volume of Cell Nuclei in Amputation Neuromas and in Neurofibromas. R. Altschul and A. M. Friesen.—p. 225.
Intratracheal Transplantation with Brown-Pearce Carcinoma. T. T. Bronk and M. Appel.—p. 228.
Tissue Culture Experiments on Biologic Action of Methyl bis (Beta-Chlorethyl) Amine and Its Hydrolysis Products. H. B. Fell and C. B. Allsopp.—p. 238.
*Nodular Hyperplasia of Thyroid Glands Induced by Thiouracil. G. L. Laqueur.—p. 247.

Nodular Hyperplasia of Thyroid Induced by Thiouracil.—Laqueur describes studies on male and female albino rats. There were changes in weight and morphology of the thyroid and hypophysis following prolonged administration of thiouracil. A progressive increase in weight of the two organs was limited to the female rats. There was evidence of involution of the thyroid in male rats which had received the diet for ten months. The regressive changes in the thyroid were associated with cytologic alterations in the hypophyses. Diffuse hyperplasia of the thyroid was the most uniform response to the drug. Definite nodular hyperplasia was found in 33 per cent of all the rats. The histologic structure of the nodules varied, and the same gland harbored nodules of different histologic appearance in several instances. The anterior pituitary thyrotropic hormone is responsible for the hyperplastic changes in the thyroid after administration of antithyroid compounds, because hyperplasia is abolished in the hypophysectomized animal. Observations indicate that the thyrotropic hormone reaches the thyroid long enough and in such a quantity that active thyroid hyperplasia persists. Diffuse hyperplasia is the earliest and most uniform response to antithyroid agents. Nodular hyperplasia may develop later. The observations on mice in which nodules do not develop in the thyroid gland after prolonged exposure to these agents are of importance. It seems reasonable that the cause for the development of nodules should be looked for in the thyroid itself. Since spontaneous tumors in that gland are rare in young rats, it may be suggested that the activity of the pituitary thyrotropic hormone provides the growth stimulus and that the formation of nodules is one of the responses of which the thyroid is capable.

Connecticut State Medical Journal, Hartford

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Some Modern Aspects of Lymphomas and Leukemias. L. F. Craver.—p. 302.
What General Practitioners Should Know About Dermatology. G. C. Andrews.—p. 309.
Diagnosis of Disease Arising from Occupation: Some Special Features and Pitfalls. L. C. McGee.—p. 315.
Orbital Tumors: Reports of Cyst of Inferior Oblique Tendon: Other Rare Orbital Tumors: Review of Literature. H. L. Birge.—p. 319.
Intussusception Associated with Small Bowel Tumors. R. M. Lowman, L. L. Waters and W. Mendelsohn.—p. 327.
Despotism by Consent of Governed. J. H. Howard.—p. 333.

Endocrinology, Springfield, Ill.

44:293-390 (April) 1949. **Partial Index**

Quantitative Studies of Cell Types in Rat Hypophysis Following Unilateral Adrenalectomy. J. C. Finerty and B. Briseno-Castrejon.—p. 293.
Effect of Hypnotics on Blood Sugar and Action of Insulin. E. Larson.—p. 301.
Hydrolysis of Conjugated Sulfates of Estrogens by Commercial Enzyme Preparation of Aspergillus Oryzae. H. Cohen and R. W. Bates.—p. 317.
Preliminary Observations on Antidiuretic Substance Recovered from Urine of Patients with Cirrhosis of Liver. G. H. Stueck Jr., S. H. Leslie and Elaine P. Ralli.—p. 325.
Involution of Adrenal Cortex of Rats Treated with Thiouracil. M. X. Zarrow and W. L. Money.—p. 345.
Influence of Steroid Hormones on Granulation Tissue. M. Taubenhaus and G. D. Amromin.—p. 359.
Quantitative Relation Between Certain Amino Acids and Glycogenesis as Influenced by Adrenalectomy and Adrenal Replacement. J. Awapara, H. N. Marvin and B. B. Wells.—p. 378.

Hawaii Medical Journal, Honolulu

8:251-320 (March-April) 1949

Studies on Cultivation of Leprosy Bacillus. K. Nakamura.—p. 265.
Maternal Mortality in Hawaii. Janet M. Boog.—p. 267.
Epidemic Keratoconjunctivitis. W. J. Homes.—p. 272.
Pneumatosis Cystoides Intestini: Causing Obstruction of Small Intestine. M. Gerundo and M. L. Chang.—p. 273.
Intravenous Procaine: New Uses for Old Drug. J. S. Horan.—p. 276.

Industrial Medicine, Chicago

18:133-176 (April) 1949

Cornell Index Used as Appraisal of Personality by Industrial Health Service—I. Total Score. J. S. Felton.—p. 133.
A 500-Employee Medical Department Layout. C. E. Martin.—p. 145.
Health is Big Business for Small Industries. J. J. Wittmer.—p. 146.
College Course on Medical Basis of Accident Compensation—As Taught at Swiss Universities. F. Zollinger.—p. 149.
*Ptomaine Food-Poisoning a Myth. G. M. Dack.—p. 151.
Surgery of Gastric Ulcer. W. Walters.—p. 155.
*Industrial Accidents and Peripheral Vascular Diseases. S. S. Samuels.—p. 157.
New Approach to Problem of Impaired Health. W. R. P. Emerson.—p. 159.
Ambulatory Treatment of Leg Ulcers with Pressure Bandages. O. Meyer.—p. 161.
Problems in Control of Occupational Cancer. W. C. Hueper.—p. 163.
Medical Testimony. L. R. Ellars and W. M. Twyman.—p. 167.

Ptomaine Food-Poisoning a Myth.—Dack points out that the term ptomaine poisoning was coined in 1870 and was associated in those times with putrefaction, particularly alkaline extracts of protein decomposition. The commonly recognized chemical poisons, arsenic, copper, antimony and lead, were early ruled out as the causal factor of ptomaine poisoning. Later, while bacterial toxins, particularly those of the Salmonella group and of Bacillus botulinus were searched for in cases of food poisoning, a bacterium as omnipresent and as common as the staphylococcus was completely ignored. The author describes his studies on a hemolytic staphylococcus that was isolated in a case of food poisoning. He is convinced that this is the most frequent type of food poisoning and cites some of the large outbreaks that occurred during the last war. The best control is adequate refrigeration. If foods are adequately refrigerated, then the staphylococcus does not grow and produce its poison. Some strains of staphylococci do not produce this poison. It is not known how many of them do. Complete studies have not been made. This type of food poisoning has been most commonly spoken of as ptomaine food-poisoning.

Industrial Accidents and Peripheral Vascular Disease.—Samuels calls attention to the close relation between peripheral vascular diseases and serious complications resulting from slight trauma. Many cases of leg amputations for gangrene have resulted in delayed claims for compensation. After the leg has been removed the patient may recall that the gangrene preceding the amputation was produced by some insignificant trauma. Patients with preexisting arterial insufficiency in the extremities, as in Buerger's disease or arteriosclerosis obliterans, are particularly susceptible to the development of gangrene if subjected to minimal trauma which would not be serious if the circulation were normal. The patient with preexisting arterial insufficiency in the extremities is susceptible to effects of exposure to a cold environment to a much greater degree than a person with normal circulation. Workers in butcher shops or refrigerated food compartments, as in ship storage rooms, or employees in street-cleaning departments are all candidates for the disability if the circulation in the extremities is deficient. The increasing use of electrical vibrating tools and pneumatic hammers has produced a form of Raynaud's syndrome of the fingers and hands which may cause total disability. Evidence of this condition indicates the advisability of immediate change of occupation. Many prospective employees with advanced arterial disease of the lower extremities slip through physical examination undetected in occupations where such a disease would be a serious hazard. Physicians have not been sufficiently trained in the detection of arterial disturbance. A simple test consists in having the patient, while in a recumbent position, elevate the legs to an angle of about 45 degrees. The feet are then flexed and extended rapidly at the ankle joints, and the plantar surfaces are observed. If ischemia should develop, this is evidence of organic arterial insufficiency.

Journal of Bacteriology, Baltimore

57:269-388 (March) 1949. **Partial Index**

Serologic Study of Members of Pseudomonas Genus. J. Munoz, M. Scherago and R. H. Weaver.—p. 269.

*Effect of Ultrasonic Waves upon Klebsiella Pneumoniae, Saccharomyces Cerevisiae, Miyagawanella Felis, and Influenza Virus. A. D. Hamre. —p. 279.

Demonstration of Viral Inclusion Bodies in Unstained Tissue Sections with Aid of Phase Microscope: I. Inclusion Bodies of Yellow Fever, Herpes Simplex, Fowl Pox, and Distemper. J. J. Angulo, O. W. Richards and A. L. Roque.—p. 297.

Circulin, Antibiotic from Organism Resembling Bacillus Circulans. F. J. Murray and others.—p. 305.

Some Remarks on Image Contrast in Electron Microscopy and Two-Component Objective. J. Hillier.—p. 313.

Internal Structure and Nuclei in Cells of Escherichia Coli as Shown by Improved Electron Microscopic Techniques. J. Hillier, S. Mudd and A. G. Smith.—p. 319.

Fungus-Inhibitive Properties of Bromoacetamides. J. M. Leonard and V. L. Blackford.—p. 339.

Chloramphenicol (Chloromycetin) in Experimental Cholera Infections. R. L. Gauld and others.—p. 349.

Recovery from Ultraviolet Irradiation in Escherichia Coli. R. B. Roberts and E. Aldous.—p. 363.

Effect of Ultrasonic Waves.—Hamre states that two types of high frequency sound generators have been used: the magnetostriction oscillator, which produces vibrations at about 9,000 cycles per second, and the quartz crystal generator, in which the frequency of the sound depends on the crystal and can be as high as 800,000 cycles per second. In ultrasonic experiments with a quartz crystal generator the following factors must be taken into consideration: (1) the size of the crystal, (2) the frequency of the crystal, (3) the amplitude or intensity of the wave, (4) the distance between the top of the crystal and the bottom of the container used for the material to be treated, (5) the type of container used for the material to be treated, (6) the depth of liquid being treated, (7) the composition of the suspending medium for the cells being treated and (8) the type of cooling system used. She found that the mortality rate of Klebsiella pneumoniae was higher when the cell suspension was treated in a cellophane-bottomed container than when a glass container was used. The volume of liquid being treated was important. A decrease in the amplitude of the ultrasonic waves resulted in a decrease in the mortality of K. pneumoniae. A higher mortality rate of K. pneumoniae was obtained when the cells were suspended in broth than in 0.85 per cent sodium chloride or in buffer solution. However when 0.002 per cent sorbitan monooleate was added to the saline solution to give the same surface tension as broth, the mortality rate of K. pneumoniae was the same as it was in broth suspensions. The mortality rate of Saccharomyces cerevisiae was about the same in broth suspensions and in buffer suspensions. Electron micrographs of K. pneumoniae and Flavobacterium cerevisiae showed the ruptured cells and cell walls. Miyagawanella felis (the agent of feline pneumonitis) was inactivated by ultrasonic energy after twenty minutes' treatment. An increase in the amount of agent was observed after ten minutes' treatment, probably due to the dispersion of aggregates of the elementary bodies. Ultrasonic energy also inactivated influenza virus A (PR8 strain). In none of the ultrasonic experiments conducted was 100 per cent of the cells or virus destroyed.

Journal of Immunology, Baltimore

61:209-282 (March) 1949

Studies in Dysentery Vaccination: VI. Primary Vaccination of Children with Polyvalent Vaccines of Shigella. M. L. Cooper, J. Tepper and H. M. Keller.—p. 209.

Id.: VII. Response of Children to Booster Injections of Shigella Vaccines. M. L. Cooper, J. Tepper and H. M. Keller.—p. 221.

Immune Response in Mice After Vaccination with Bacterium Tularense. I. Ruchman and L. Foshay.—p. 229.

Evaluation of Test for Antihemagglutinin in Diagnosis of Infections by Mumps Virus. F. C. Robbins, L. Kilham, J. H. Levens and J. F. Enders.—p. 235.

Specificity of Agglutination-Reaction with Autoclaved Hemolytic Streptococci and Role of Group-Specific Polysaccharide in Reaction. S. J. Liao.—p. 243.

Precipitin Production in Chickens: IV. Comparison of Antibody Responses of Eight Avian Species. H. R. Wolfe and E. Dilks.—p. 251.

Studies in Metabolism of Tubercle Bacillus: I. Production of Riboflavin. M. I. Smith and E. W. Emmart.—p. 259.

Relation of Shigella Type-Specificity and Susceptibility to Antibiotic-Producing Strains of Escherichia Coli. S. P. Halbert and M. Gravatt. —p. 271.

Journal of Investigative Dermatology, Baltimore

12:145-202 (March) 1949. **Partial Index**

Histadyl Cream in Treatment of Pruritic Dermatoses. S. Epstein and W. L. Macaulay.—p. 145.

Serum Concentration Following Oral Administration of Crystalline Procaine Penicillin G and Crystalline Sodium Penicillin G. D. K. Kitchen, E. W. Thomas and C. R. Rein.—p. 147.

Dermatitis Due to Antihistaminic Agents. E. Epstein.—p. 151.

Treatment of Herpes Zoster with Moccasin Venom. C. C. Dennie, D. B. Morgan and F. P. Coombs.—p. 153.

Effects Produced on Pilosebaceous System and Adrenals of Rabbit by Inunction of Sex Hormones. F. Reiss and S. Gellis.—p. 159.

Failure of Fatty Acid Salts to Lessen Cutaneous Irritation Caused by Adhesive Plaster. L. E. Gaul and G. B. Underwood.—p. 173.

Immediate Wheal and 24-48 Hour Tuberculin Type Edematous Reactions to Trichophytin. O. F. Jillson and M. Huppert.—p. 179.

Weight of Skin. M. Leider.—p. 187.

Journal of Lab. and Clinical Medicine, St. Louis

34:439-586 (April) 1949. **Partial Index**

*Response of Lingual Manifestations of Pernicious Anemia to Pteroylglutamic Acid and Vitamin B_{12}. J. F. Schieve and R. W. Rundles. —p. 439.

Capillary Fragility Studies (Göthlin Test) on One Hundred Patients Receiving Dicumarol. R. A. Jubelirer and H. I. Glueck.—p. 448.

Use of Russell Viper Venom and Lecithin as Thromboplastin in Estimation of Prothrombin. C. A. Mawson.—p. 458.

Protamine Titration as Indication of Clotting Defect in Certain Hemorrhagic States. J. G. Allen and others.—p. 473.

Enzyme Studies on Human Blood. III. Effect of Plasma Proteins on Coagulation. G. Y. Shinowara.—p. 477.

Use of Urinary Pigment Excretion for Measurement of Basal Metabolic Rate. J. J. Vorzimer, I. B. Cohen and J. Joskow.—p. 482.

Exacerbation of Alloxan Diabetes in Mice by Injection of Typhoid Vaccine: Role of Adrenal Gland. L. Tobian Jr. and W. L. J. Edward. —p. 487.

Excretion of Penicillin in Human Milk. R. Rozansky and A. Brzezinsky. —p. 497.

Bacterimetric Studies III. Blood Level Studies on Teropterin Metabolism. G. Toennies and D. L. Gallant.—p. 501.

Study of Some Factors Involved in Colorimetric Determination of Caronamide. H. S. Collins and M. Finland.—p. 509.

Dimethylether of d-Tubocurarine Iodide. E. E. Swanson, F. G. Henderson and K. K. Chen.—p. 516.

Hereditary Angioneurotic Edema, with Case Report. J. M. Sheldon, E. O. Schreiber and R. G. Lovell.—p. 524.

Occurrence of False Positive Trichina Precipitin Tests in Infectious Mononucleosis. F. A. Bassen, A. E. Thomson and A. Silver.—p. 543.

Chronic Typhoid Carrier: II. Effect of Cholecystectomy on Bacteriologic Course. A. Littman, J. A. Vaichulis and A. C. Ivy.—p. 549.

Lingual Manifestations of Pernicious Anemia.—Schieve and Rundles treated 8 patients with atrophy and inflammation of the lingual mucosa, resulting from pernicious anemia with pteroylglutamic acid. During the first month patients were given 75 to 100 mg. of the drug by mouth and for the next two months 30 to 50 mg. daily. In 2 of these patients treat-

Archives of Pathology, Chicago

46:401-502 (Nov.) 1948

Aging Processes in Ovaries of Mice Belonging
in Incidence of Mammary Carcinoma. L.
Effects of Folic Acid Antagonists Inocul
P. F. Wagley and H. R. Morgan.—
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Lancet, Minneapolis

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Eradication of Tuberculosis. S. A. Slater.

Following Negative 70 mm. Film Im-
Mass Chest X-Ray Survey. W. Roemmich.

in Colleges. M. L. Durfee.—p. 124.
and Tuberculosis. C. H. Schmidt.—p. 128.
Versus Exposition Prophylaxis of Disease in Medical
Particularly Tuberculosis. K. F. Meyer.—p. 129.
of Lungs. H. E. Miller.—p. 136.
with Open Drainage of Tuberculous Pulmonary Cavities
). J. V. Thompson.—p. 141.
Osteomyelitis of First Rib Resulting in Brachial Plexus
Compression: Case Report. E. H. Winterhoff and J. D. Murphy.
p. 145.

Journal of the Mount Sinai Hospital, New York

15:337-392 (March-April) 1949

Functional Significance of Various Leukocytes in Inflammation. W. E. Ehrich.—p. 337.
Acute Renal Insufficiency Following Transfusion: Pathogenesis and Treatment. I. G. Kroop, A. P. Fishman, H. E. Leiter and A. Hyman. —p. 343.
Psychologic Study of Neurodermatitis with Case Report. E. D. Joseph, S. M. Peck and M. R. Kaufman.—p. 360.
Sarcosporidiosis in 2 Cases with Trichinosis. H. S. Arai.—p. 367.
Phrenic Nerve Paralysis Associated with Erb's Palsy in Newborn: Clinical and Anatomicopathologic Study. L. B. Turner and A. A. Bakst.—p. 374.
Hematoma of Rectus Abdominis Muscle Simulating Gynecologic Disease. R. I. Walter and R. Landesman.—p. 380.
Osteogenesis Produced by Chemical Extract of Bone. J. Hartley, S. S. Tanz and M. Schneider.—p. 383.

Journal National Malaria Society, Columbia, S. C.

8:1-114 (March) 1949. **Partial Index**

Physiologic Studies in Human Malarial Host: I. Blood Plasma, "Extracellular" Fluid Volumes and Ionic Balance in Therapeutic P. Vivax and P. Falciparum Infections. R. R. Overman, T. S. Hill and Y. T. Wong.—p. 14.
Summary of Experimental Use of DDT as Mosquito Larvicide. F. F. Ferguson, W. M. Upholt and S. W. Simmons.—p. 32.
Adrenal Hypertrophy in Chicks Infected with Plasmodium Gallinaceum. E. M. Nadel, D. J. Taylor, J. Greenberg and E. S. Josephson.—p. 70.
Hypersensitivity to Sulfadiazine of Chlorguanide-Resistant Strain of Plasmodium Gallinaceum. J. Greenberg.—p. 80.

J. Neuropathology & Exper. Neurology, Baltimore

8:125-254 (April) 1949. **Partial Index**

Herpes Simplex Encephalitis in Man, with Report of 3 Cases. W. Haymaker.—p. 132.
Spontaneous Ventricular Rhinorrhea and Otorrhea. A. E. Walker. —p. 171.
Pathology and Pathogenesis of Infectious Polyneuritis (Guillain-Barré Syndrome). I. M. Scheinker.—p. 184.
Experimental Hydrocephalus and Obliteration of Ventricles. L. Bakay Jr. —p. 194.
Cerebral Endarteritis Obliterans in an Infant. R. Altschul.—p. 204.
Lipoidosis of the Brain, Combined with Glycogenosis of the Liver. H. Josephy.—p. 214.
Cerebral Schistosomiasis. R. C. Bassett and K. Lowenberg.—p. 220.
Astroblastoma and Perithelial Sarcoma in a Case of Neoplastic Disease of the Brain. J. D. French.—p. 232.
Development Anomaly with Reduction of Lateral Horns of Spinal Cord in a Case of Congenital Megacolon (Hirschsprung's Disease). E. C. Alvord Jr., L. D. Stevenson and S. W. Dooley.—p. 240.

Journal of Thoracic Surgery, St. Louis

18:137-278 (April) 1949

*Malignant Nature of Bronchial Adenoma. A. Goldman.—p. 137.
Adenoma of Bronchus. C. B. Rabin and H. Neuhof.—p. 149.
Clinical Use of Prosthesis to Prevent Overdistention of Remaining Lung Following Pneumonectomy. J. Johnson, C. K. Kirby, C. S. Lazatin and J. A. Cocke.—p. 164.
Evaluation of Extrapleural Pneumonolysis with Lucite Plombage: Report of 51 Cases. J. C. Trent, J. D. Moody and J. S. Hiatt Jr.—p. 173.
Experimental and Clinical Study of Collapse Therapy Using Fiberglas Wool and Fabric. T. J. E. O'Neill, H. P. Redondo Ramirez and R. G. Trout.—p. 181.
Analysis of Variations of Segmental Bronchi of Right Lower Lobe of Fifty Injected Lungs. F. R. Smith and E. A. Boyden.—p. 195.
Analysis of Variations of Segmental Bronchi of Left Lower Lobe of Fifty Dissected, and Ten Injected, Lungs. R. M. Berg, E. A. Boyden and F. R. Smith.—p. 216.
*Alveolar Cell Carcinoma of Lung (Pulmonary Adenomatosis, Jagziekte?): Multicentric Tumor of Epithelial Origin. N. C. Delarue and E. A. Graham.—p. 237.
Ectopia Bronchi. W. H. Falor and A. H. Kyriadkides.—p. 252.
Lung Hernia: Case Report and Review of Literature. J. J. Hurwich. —p. 261.
Immediate Cardiovascular and Respiratory Adjustments to Pneumonectomy. J. H. Long, M. R. Wester and M. J. Oppenheimer.—p. 269.

Malignant Nature of Bronchial Adenoma.—Goldman reports 5 patients, 3 men and 2 women between the ages of 25 and 60, with bronchial adenoma showing malignant qualities. The most malignant changes were observed in the mixed tumor type of bronchial adenomas; in 1 case the complete transformation to a clinical and histologic picture of bronchiogenic carcinoma was observed, suggesting that carcinoma of bronchiogenic type may occasionally arise in a mixed tumor type of bronchial adenoma. Carcinoid types of bronchial adenoma not infrequently show metasatic involvement of the mediastinal lymph nodes; this occurred in 1 case in which the tumor was present for thirty years and in another in which the duration of symptoms was only a few months. Bronchial adenomas of carcinoid type occurred together with multiple tumors of low grade malignancy in other organs of 2 patients, suggesting that the stimulus for the production of bronchial adenoma is the same as that capable of producing neoplasms in other organs than the lung. The failure of bronchial adenoma to produce vascular seedings in 1 case, even though tumor cells were demonstrated floating in the lumen of a large pulmonary vein, suggests that the only favorable soil for bronchial adenoma is in the bronchi and lung. Lobectomy was performed in 2 of the author's cases and pneumonectomy in 1, giving approximately 100 per cent five year cures where this period of time had elapsed since operation. From the observation of tumors of over thirty years' duration, it would appear that several decades will be necessary to observe patients treated by lobectomy and pneumonectomy before the recurrence rate can be definitely established.

Alveolar Cell Carcinoma of Lung.—Delarue and Graham report 1 case of carcinoma of the lung in a man aged 35, which seems to have arisen in the cells lining the alveoli rather than in a bronchus. The preponderance of evidence allows one to consider this particular malignant pulmonary lesion, which is characterized by a reproduction of the alveolar structure of the lungs and the typically multiple arrangement of neoplastic areas, coupled with the failure to demonstrate a hidden primary tumor, as multicentric in origin and derived from endodermal elements. Consequently it is permissible to encourage the use of the term "alveolar cell carcinoma," implying the presence of epithelial cells lining the alveoli, malignant changes which are responsible for the production of a tumor such as presented by the author's patient. The case is illustrative and typical, demonstrating the slow growth of the neoplasm. The known duration of the patient's disease was at least six years. Initial lobectomy performed in 1943 resulted in freedom from symptoms for four years. In 1947 the remaining portion of the right lung was resected, since manifestations of the disease reappeared in this part of the lung. The microscopic pattern of the tumor observed at the second operation was similar to that seen at the first operation; there was evidence of local invasion of the chest wall. The regional lymph nodes were not involved. The patient was given intensive postoperative irradiation therapy, and when he was last seen, nine months after the second operation, bronchoscopic observations were normal and there were no tumor cells observed in the smears from the bronchus. Surgical treatment has resulted in worth while palliation. Attention is called to the similarity of the disease in this case to jagziekte, the supposedly virus disease of South African sheep.

Medical Annals of District of Columbia, Washington

18:113-170 (March) 1949

Effect of Tetraethylammonium Chloride on Peripheral Blood Flow. J. R. Veal, J. N. Shadid and W. L. Jamison.—p. 113.
Surgical Aspects of Subarachnoid Hemorrhage. J. P. Murphy.—p. 119.
Jaundice in Myocardial Infarction. I. B. Brick.—p. 129.
Salmonella Choleraesuis Bacteremia Treated with Streptomycin: Report of Case. J. Selby and J. Tidler.—p. 134.
Scirrhous Carcinoma of Breast: Report of Case. S. T. Kimble.—p. 136.

18:171-228 (April) 1949

*Physiologic Basis for Treatment of Diabetic Coma. J. F. Fazekas and A. E. Parrish.—p. 171.
Vomiting Associated with Pregnancy. L. V. Dill.—p. 178.
Chronic Myelogenous Leukemia Treated with Urethane: Report of Case. W. D. Claudy.—p. 185.
Silas Weir Mitchell and the Tired Nerves. E. Podolsky.—p. 188.

Diabetic Coma.—According to Fazekas and Parrish, the brain depends on the circulating blood glucose as its principal source of energy. In so far as the cerebral tissues are concerned, insulin is not a necessary catalyst for the oxidation of glucose. In diabetic coma there is nevertheless a reduction of the cerebral cells to utilize the available glucose. The cerebral hypoxia is of the histotoxic type, and the acidosis and ketosis may be etiologic factors. Recovery from diabetic coma seems to be more closely correlated with the degree and duration of the depression of the cerebral metabolic rate than with the other biochemical alterations. In view of the sensitivity of the cerebral cells to anoxia, the administration of large doses of insulin is indicated as soon as the diagnosis is established, since it is most important to restore the cerebral metabolic rate to normal as rapidly as possible. Hypoglycemia should be avoided because of its depressant effects on cerebral metabolism. This is best accomplished by the administration of dextrose as soon as insulin activity becomes manifest and should be continued for at least six hours after the administration of the last large dose of insulin.

Military Surgeon, Washington, D. C.

104:247-330 (April) 1949. Partial Index

Military Responsibility for Civilian Health in War. R. W. Bliss.—p. 247.
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Spinal Cord Symptoms and Signs as First Manifestations of Cerebellar Medulloblastoma. S. W. Tuthill.—p. 264.
Carcinoma of Male Breast. G. Q. Lee.—p. 270.
Q Fever a Problem to Milk Industry. A. B. Rich and D. S. Robertson.—p. 276.
Psychotic States: Correlations of Biochemical and Histologic Changes in the Brain. R. de Rohan Barondes, R. H. Kuhns, D. I. Levine and C. E. Strachan.—p. 278.
New Diluent for Enumeration of Leukocytes. I. J. Yetwin.—p. 286.

New York State Journal of Medicine, New York

49:689-848 (April 1) 1949

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Some Clinical Features of Pneumoconiosis. J. B. Amberson.—p. 830.
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Aids in Diagnosis of Glaucoma. J. A. Inciardi.—p. 836.

49:849-976 (April 15) 1949

SYMPOSIUM ON PRIMARY CARCINOMA OF THE LUNG

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Pathology of Carcinoma of Bronchus. O. Auerbach.—p. 900.
Role of Bronchoscopy in Diagnosis and Treatment. L. H. Clerf and P. Herbut.—p. 907.
Cure Rate in Lung Cancer. R. H. Overholt and I. C. Schmidt.—p. 910.
Role of Physical Methods in Diagnosis. H. Kent.—p. 917.
Rehabilitation in Poliomyelitis. K. G. Hansson.—p. 923.
Present-Day Education in Physical Medicine. W. Bierman.—p. 927.
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Interrelationship of Papilledema and Polycytemia. M. Axelrod and S. Epstein.—p. 939.
Leukemia, Lymphosarcoma and Hodgkin's Disease. M. M. Black, H. Bolker and W. E. Howes.—p. 943.

Southern Medical Journal, Birmingham, Ala.

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*Role of Massive Blood Transfusions in Management of Ruptured Uterus and Other Serious Obstetric Shock. C. J. Lund and F. O. Brumfield.—p. 263.
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Metastatic Cancer of Lung. R. C. Pendergrass.—p. 303.
Head Injuries in Infancy and Childhood. B. Woodhall.—p. 310.
Repair of Painful Sacral Scars. M. M. Marks.—p. 319.
Aneurysm of Left Ventricle Secondary to Myocardial Infarction: Report of Case in Thirty-Five-Year-Old Man. H. L. Newbold, G. B. Wyatt and T. F. Frist.—p. 323.
Recent Advances in Understanding of Acute Episodes in Coronary Artery Disease. G. R. Meneely.—p. 325.
Changing Concept of Industrial Medicine. G. R. Rowntree.—p. 333.
Coordinating Lay Groups. F. J. Underwood.—p. 336.
Common Sources of Confusion in Psychiatric Matters. H. Cleckley.—p. 341.
Industrial Sporotrichosis. H. M. Robinson.—p. 343.
Further Observations on Suppository as Contraceptive. N. J. Eastman.—p. 346.

Blood Transfusion in Obstetrics.—Lund and Brumfield used massive transfusions of citrated whole blood in the treatment of 6 cases of serious obstetric shock and hemorrhage, 4 of which were due to spontaneous rupture of the uterus. Each patient received between 3,500 and 7,500 cc. of blood within a few hours, an amount which exceeded her normal calculated or estimated blood volume. Blood was given rapidly and efficiently without special apparatus by the technic of stripping the blood from the rubber tube of the transfusion set under positive pressure, starting the transfusion through a large gage needle. One hundred cubic centimeters can be given per minute through a single vein with this method, though usually two or more portals are required in severe shock. The immediate rapid restoration of circulating blood volume combined with prompt hemostasis prevented death in this group, which might well have had several fatalities. No untoward effects were noted from the transfusions. In 3 of the 4 patients the spontaneous rupture of the uterus was of the incomplete variety, and the rapid replacement of blood permitted the control of shock while preparations were being made for immediate surgical repair. The fourth patient presented an acute complete spontaneous uterine rupture during delivery. This patient was given successful immediate surgical treatment while moribund and while blood was being rapidly replaced under pressure by using both arms and one leg for the transfusions. Unless the loss of blood is completely replaced the puerperium may be further complicated by anemia, hypoproteinemia and not infrequently infection. The only stormy convalescence occurred in the patient who did not have her anemia corrected immediately after the hemorrhage. In all of the other patients the immediate postoperative blood count revealed hemoglobin levels equal to or higher than those before the operation.

Chronic Recurrent Pancreatitis.—Hersperger reports 33 cases of chronic recurrent pancreatitis in 23 men and 10 women between the ages of 18 and 67 years. Thirty-one of the patients had a history of severe pain. Of the 2 in whom pain was mild, 1 had evidence of calcification in the pancreas, the other had had diabetes for years and steatorrhea more recently. A vague, deep epigastric resistance is frequently reported, but only 5 of the 33 patients demonstrated an unquestionable mass. Serum amylase determinations were performed in 8 cases; in 7 the values were significantly elevated. The first requirement in the diagnosis of chronic recurrent pancreatitis is that the physician be familiar with the possible manifestations of the disease and consider it in the diagnosis along with other disorders which cause upper abdominal pain. It should especially be considered if appropriate studies have failed to reveal disease of adjacent organs when there is a long history of recurring attacks of severe, steady epigastric pain not relieved or only temporarily relieved by morphine sulfate. A history of alcoholism and the presence of disturbed carbohydrate metabolism is strong supportive evidence. Roentgen pictures taken to exclude other diseases should be carefully scrutinized for evidence of calcification within the pancreas. Excess fat and meat fibers in the stools and definite evidence of reduced acinar function by duodenal drainage are not to be expected early but may become manifest as the disease progresses. It may be impossible to make a diagnosis between attacks unless some of the sequelae have developed. Chronic recurrent pancreatitis can be accurately demonstrated by the observation of elevated serum amylase or lipase values in the midst of an exacerbation.

Surgery, Gynecology and Obstetrics, Chicago

88:417-544 (April) 1949

Posttraumatic Vasomotor Disorders with Particular Reference to Late Manifestation and Treatment. H. B. Shumacker Jr. and D. I. Abramson.—p. 417.
Carcinoma of Vulva: Report of 313 Cases. J. P. Palmer, M. G. Sadugor and M. C. Reinhard.—p. 435.
Ureterosigmoid Anastomosis. J. J. Cordonnier.—p. 441.
Partial Gastrectomy in the War Years. C. A. Schoemaker.—p. 447.
Double Jejunal Lumen Gastrojejunal Anastomosis: Pantaloons Anastomosis. M. E. Steinberg.—p. 453.
Cervical Stump: Analysis of 123 Cases. J. B. Crawford, C. G. Collins and J. C. Weed.—p. 465.
Inguinal and Femoral Hernioplasty. C. B. McVay and B. J. Anson.—p. 473.
*Effectiveness of Dicumarol Prophylaxis Against Thromboembolic Complications Following Major Surgery: Four Years Survey: 3,304 Cases. W. D. Wise, F. F. Loker and C. E. Brambel.—p. 486.
Sliding Inguinal Hernia of Colon: Abnormal Peritoneal Folds and Simple Safe Method of Restoration. R. K. Brown.—p. 495.
Resection of Great Veins on Lateral Pelvic Wall. A. Brunschwig and T. S. Walsh.—p. 498.
Carcinoma of Cecum Complicated by Appendicitis or Para-Cecal Abscess. C. A. V. Burt.—p. 501.
Correction of Stress Incontinence by Simple Vesicourethral Suspension. V. F. Marshall, A. A. Marchetti and K. E. Krantz.—p. 509.
Intramedullary Bone Fixation in Pathologic Fractures. J. L. Ehrenhaft and R. T. Tidrick.—p. 519.
Prolonged Spinal Anesthesia, Use of Intrathecal Vasoconstrictor Substances. M. L. Brockmyer and T. S. McGowan.—p. 528.

Dicumarol® to Prevent Thromboembolic Complications.—Dicumarol® has been administered by Wise and co-workers to 3,304 patients in a prophylactic program. The initial dosage of the drug was 200 mg. administered on the second postoperative day. Subsequent doses were given on alternate days to maintain relative prothrombin activity of not under 40 per cent of normal. Dicumarolization was continued throughout the hospitalization period and discontinued when the patient was discharged. The average total consumption was 600 to 800 mg. The authors observed a significant reduction in the incidence of venous thrombosis following major abdominopelvic operation when oral administration of the anticoagulant, dicumarol,® was used prophylactically. Reduction in the mortality rate due to fatal embolism is statistically probable. Conservative depression of the prothrombin activity to 40 to 50 per cent of normal resulted in satisfactory prophylaxis and negligible hemorrhagic complications. No evidence of hepatic toxicity due to dicumarol® was noted as revealed by fibrinogen determinations. Rigid standardization of laboratory procedures for gaging the dicumarol® effect is essential for the success of a prophylactic program.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

57:143-180 (April) 1949

*Surgical Treatment of Decompensating Heart Disease and Angina Pectoris. P. G. Flothow.—p. 143.
*Comparative Study of Acute and Chronic Appendicitis in Pregnancy. E. S. Hoffman and M. Suzuki.—p. 150.
Water Balance. E. B. Speir and C. L. Wagner.—p. 158.
Criminal Abortion and Intestinal Destruction. W. E. Branch and C. L. Cooper.—p. 163.
Opisthotonus Fetalis. S. F. Nagyfy.—p. 165.
Hemangioma of Cervix: Case Report. J. F. McNabb and L. F. Bushnell.—p. 167.
Obstetrical Anesthesia at the Cedars of Lebanon Hospital: Ten-Year Survey. G. S. Harris.—p. 169.
Antihormone Formation in Man Following Chorionic Gonadotropin. J. H. Leathem and J. T. Bradbury.—p. 173.

Angina Pectoris.—Flothow treated 23 patients with angina pectoris by paravertebral alcohol injection of the dorsal sympathetic ganglions from the first to the fifth either on the left side or on both sides. Seventeen patients were decidedly improved, obtaining from 75 to 100 per cent relief of their pain. Other types of surgical procedures on the sympathetic nerves in the treatment of angina pectoris are cervical sympathectomy, cervicodorsal sympathectomy, dorsal ganglionectomy and ramisectomy, and intraspinal dorsal root section. The type used by the author consists of removal of the stellate ganglion and the first three or four dorsal ganglions, but it would seem that the type of operation preserving the inferior cervical and first dorsal ganglions, thus avoiding a Horner's syndrome, would appear to be the operation of choice. Sympathectomy has been ultimately satisfactory in at least 75 per cent of the patients. Unsatisfactory results were observed to occur in women generally, in those men in whom the diagnosis perhaps was not correct, and in patients with addiction to morphine and its derivatives. Three cases of angina pectoris with concomitant decompensating cardiac disease in men aged 63, 69 and 46 are reported by the authors. Two of them were treated with paravertebral alcohol injections and the third one with sympathectomy. The treatment succeeded not only in relieving the anginal pain but also in clearing up the decompensation without further medication. Patients without irreversible changes, and in whom the decompensation can still be relieved by bed rest and medication, can be enabled to carry on normal lives, without recurring decompensation, by operation on the sympathetic ganglionated chain carrying the sympathetic innervation to the heart and its blood vessels.

Appendicitis in Pregnancy.—Hoffman and Suzuki operated on 54 pregnant women with a preoperative diagnosis of appendicitis. Twenty-three were cases of acute appendicitis and 31 were cases of chronic appendicitis. In the latter group elective appendectomy was performed on 18 patients and emergency appendectomy on 13. The history and symptomatology in the acute series and in the emergency chronic group were similar. In the emergency chronic group, 8 patients were followed and none had any recurrence of symptoms after the operation; 11 patients in the elective group were followed, and 8 remained symptom free. The right rectus incision was most frequently employed in both series of cases. The McBurney or the Davis incision is probably the incision of choice during the last six months of pregnancy. In the acute appendicitis series, the appendix was observed to be retrocecal in 11 and fixed by adhesions in 3 as compared to 3 retrocecal and 4 fixed by adhesions in the chronic group. The seriousness of the "fixed" appendix is apparent from the fact that three of four abortions which occurred within the first three postoperative days were in this group. In 4 patients in the acute group fetal loss occurred before the patients left the hospital as compared to 2 patients in the chronic group. Symptoms of threatened abortion occurred in 3 of the 18 patients in the acute series and in 4 of the 28 patients of the chronic series who were discharged from the hospital undelivered. These symptoms were controlled by the free use of sedatives and small doses of progesterone, the latter of questionable value. Follow-up studies on 18 patients in the acute series and on 24 patients in the chronic series showed that 5 of the undelivered patients in the acute series terminated their pregnancies before full term, while in the chronic series all 24 patients went to full term. The high incidence of fetal loss in the acute series is due to the high incidence of spontaneous abortion and premature labor. In acute appendicitis in pregnancy appendectomy is the procedure of choice, regardless of the period of gestation. The authors do not believe that cesarean section should precede the appendectomy in the presence of acute appendicitis with perforation and generalized peritonitis.

Yale Journal of Biology and Medicine, New Haven

21:263-364 (March) 1949

New Theory of Mutation and Origin of Cancer. L. C. Strong.—p. 292.
Unusual Case of Hypersensitiveness to Mercurial Diuretic. J. K. Meneely Jr.—p. 301.
Instrumentation for Laboratory Exercises in Basic Electrophysiology. A. Mauro and D. H. Barron.—p. 305.
Relationship Between *p*H Tolerance, Virulence and Proteolytic Enzymes in Bacteria: II. Shigella. J. M. Leise.—p. 313.
Studies in Experimental Frostbite: III. Evaluation of Several Methods for Early Treatment. R. E. Lempke and H. B. Shumacker Jr.—p. 321.
Review of Animal Experimentation in Infectious Hepatitis and in Serum Hepatitis. J. W. Colbert Jr.—p. 335.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Industrial Medicine, London

6:65-124 (April) 1949

*Vesical Tumors Induced by Chemical Compounds. M. W. Goldblatt. —p. 65.
Manganese Pneumonitis: Further Clinical and Experimental Observations. T. A. L. Davies and H. E. Harding.—p. 82.
Changes in Lungs Produced by Natural Graphite. H. E. Harding and G. B. Oliver.—p. 91.
Sickness Absence Due to Peptic Ulcers. R. Doll and M. M. Buckatszch. —p. 100.

Vesical Tumors Induced by Chemical Compounds.—Goldblatt analyzes cases of vesical tumors detected among workers in two factories in Britain which were engaged in the manufacture of a wide variety of organic intermediates and dyestuffs, rubber chemicals, textile finishing agents, organic primaries and many other compounds. In the years 1934-1947, inclusive, a total of 99 cases of vesical tumor were detected, of which 59 resulted in death during the fourteen years of observation. The total number of workers in these factories increased from 2,025 in 1934 to 4,163 in 1947. The mean period from first entry into the industry until discovery of the tumor was approximately nineteen years. Although of the primary aromatic amines only beta-naphthylamine has been shown experimentally to produce bladder tumors in dogs, evidence is presented that cases arise not only among workers who have been working exclusively with beta-naphthylamine but also among those working exclusively with aniline, benzidine and alpha-naphthylamine (containing small percentage of the beta-isomer). Tumors arising in workers who have been working with beta-naphthylamine or more than one of the amines are more likely to be malignant from the start than those arising in workers working with only one of these amines. Recurrences are characteristic of the disease and many appear from as little as a month or two after operation to as long as seven years after. Metastases were found in only 5 cases coming to necropsy, which indicates that they are relatively uncommon. The author mentions possible improvements in processing which could contribute to elimination of the disease. It is held that the so-called amino carcinogens are only indirectly responsible for the tumor formation in that they sensitize or potentiate the tissue to the true carcinogen. The amino potentiator (carcinogen as it is now called) is believed to be carried in the urine.

British Journal of Ophthalmology, London

33:197-260 (April) 1949

Experimental Studies on Pathogenesis and Treatment of Ocular Tuberculosis. A. C. Woods.—p. 197.
Vascular Action of Pilocarpine, Eserine, Adrenaline and Atropine, and Their Influence in Primary Chronic Glaucoma. G. Cristini.—p. 228.
Slit-Lamp Examination of Vitreous and Fundus. H. Goldmann. —p. 242.
Blood-Vessel Formation in Cornea. F. W. Campbell and I. C. Michaelson.—p. 248.

British Journal of Tuberculosis, London

44:1-22 (Jan.) 1949

Pulsus Paradoxus and Pleurisy. W. E. Gibb.—p. 1.
Tuberculoma of Lung Masquerading as Encysted Pleural Effusion. N. Wynn-Williams.—p. 6.
Key to Classification of Pulmonary Tuberculosis. M. Sekulich.—p. 12.
Pneumomediastinum Complicating Artificial Pneumoperitoneum. J. B. Morrison.—p. 18.

British Medical Journal, London

1:645-690 (April 16) 1949

In Praise of Idleness. S. Ogilvie.—p. 645.
Discomforts of Childbirth. G. D. Read.—p. 651.
Non-Specific Effects of Impure Penicillin. J. Ungar.—p. 654.
Needle Biopsy of Liver, with Special Reference to Modified Gillman Technic. R. Terry.—p. 657.
Severe Renal Failure After Administration of Apparently Compatible Blood. A. C. Buchan and J. Wallace.—p. 660.
Dysentery in South Persia. I. S. Stewart.—p. 662.
Further Experiences with Ethinyl Estradiol in Suppression of Lactation. T. N. A. Jeffcoate and Betty Hargreaves.—p. 664.
Metatarsus Quintus Valgus. H. Davies.—p. 664.

Journal of Hygiene, London

46:351-470 (Dec.) 1948. Partial Index

*Smallpox in Tripolitania, 1946: Epidemiologic and Clinical Study of 500 Cases, Including Trials of Penicillin Treatment. C. W. Dixon. —p. 351.
Epizootic Behavior of Mousepox (Infectious Ectromelia of Mice): Course of Events in Long-Continued Epidemics. F. Fenner.—p. 383.
*Survival of Foot-and-Mouth Disease Virus in Meat and Offal. W. M. Henderson and J. B. Brooksby.—p. 394.
Hemolytic Disease of Newborn Foals Due to Iso-Immunization of Pregnancy. R. R. A. Coombs, R. C. Crowhurst, F. T. Day and others. —p. 403.
Retention of Methallyl Chloride and Methyl Bromide by Fumigated Grain. N. van Tiel.—p. 431.

Smallpox in Tripolitania—Dixon describes methods used in two epidemics of smallpox which occurred in Tripolitania during 1946. Control was effected by the "expanding ring" method instead of mass vaccination of the population. The "expanding ring" vaccination was organized on the supposition that smallpox behaves like other droplet infections and that the maximum incidence would be expected in the family, the chance of infection decreasing as distance from the family center increased. In each case the family was vaccinated first, then the inhabitants of the surrounding tents together with close contacts such as relatives, next the village or group of tents and so on, the area covered increasing for five days, after which revaccination started again at the center concurrently with a search for cases. A clinical study was made of 500 patients who were admitted to hospital. Controlled experiments were made on the use of penicillin in treatment. Although it is without effect on the viremia and in general does not significantly affect mortality, it has the power of suppressing suppuration and reducing the effect of secondary sepsis. It also minimizes the amount of permanent scarring of the skin. Evidence is presented to show that the period of maximum infectivity is the stage of the preeruptive fever. The mildest conditions are infectious, but only for a short time. The virus contained in dried scabs is not considered to be an important source of infection; it may be modified in some way by passage through the skin. Although not protected by successful vaccination many contacts showed a considerable resistance to infection. Among the older persons this may have been due to previous clinical or subclinical attacks. Evidence is produced to show that among younger persons many were relatively refractory to vaccination and experienced the disease in a different way, suggesting that there is natural partial immunity to smallpox in this population.

Survival of Virus of Foot and Mouth Disease in Meat.—According to Henderson and Brooksby it has long been known that the virus of foot and mouth disease can survive in certain animal tissues at temperatures used for chilling and freezing of meat. During the war of 1939-1945 some changes took place in the methods of handling meat for importation into Great Britain from South America. One change from previous practice adopted with a small percentage of the meat was the "quick freezing" of boned quarters in special molds before the development of rigor mortis. As this might produce conditions favorable for the survival of foot and mouth disease virus, further research was necessary. It was found that the survival of virus is closely associated with the hydrogen-ion concentration of the tissue; thus the acidity of rigor mortis of muscular tissue rapidly causes inactivation. Quick freezing of beef suspends acid formation and active virus was demonstrated for as long as the meat was kept frozen. Thawing of quick-frozen meat initiates the suspended acid formation at an accelerated rate and rapidly produces a medium unsuitable for virus survival. Liver, kidney, rumen, lymph node and blood from diseased cattle have all been shown to be highly infective and to remain so if stored frozen. Acid formation in these tissues and in blood is not on the same scale as in muscle, and prolonged survival of virus is more likely even with delay in freezing and after thawing. This remains true of lymph node and of residual blood in vessels of a carcass in which the development of rigor mortis is complete. Feeding of infective offal to swine under experimental conditions resulted in the appearance of the disease.

Journal of Physiology, Cambridge

108:1-116 (March) 1949. **Partial Index**

New Method for Measuring Arterio-Venous Oxygen Difference by Means of Photoelectric Colorimeter. B. Issekutz Jr., G. Hetényi Jr. and I. Feuer.—p. 9.

*Simplified Method for Determination of Circulating Red-Cell Volume with Radioactive Phosphorus. E. B. Reeve and N. Veall.—p. 12.

Measurement of Temperature at Eardrum During Caloric Test of Labyrinth. J. J. Groen and L. B. Jongkees.—p. 33.

Intensity Discrimination of Central Fovea Measured with Small Fields. L. C. Thomson.—p. 78.

Relation Between Motor and Inhibitor Actions of Acetylcholine. J. H. Burn and J. R. Vane.—p. 104.

Radioactive Phosphorus in Estimation of Red Cell Volume.—Reeve and Veall describe experiments which were carried out to establish and to test a method in which the radioactive red cells were washed free from radioactive plasma before they were injected and in which the radioactive measurements were carried out on liquid blood samples by means of a specially designed counter. The total red cell volume in man is measured from the dilution of injected washed red cells, labeled in vitro with P_{32}. The red cells are prepared by incubating whole blood with P_{32} and afterwards washed almost free of their radioactive plasma. After injections of suspensions of such washed red cells, P_{32} is lost slowly from the circulation. The results from the method agree with results of other reliable methods. The method has also been checked in vitro. A specially designed Geiger-Müller counter taking liquid samples simplifies the necessary manipulations of standards and samples. Apart from knowledge of radioactive technic, the method requires no great technical skill.

Lancet, London

1:637-676 (April 16) 1949

Wertheim's Operation in Retrospect. V. Bonney.—p. 637.

Excretion of Chloride and Sodium After Surgical Operations. A. W. Wilkinson, B. H. Billing, G. Nagy and C. P. Stewart.—p. 640.

Treatment of Stammerer in Secondary Stage of Stammering. M. C. Crickmay.—p. 644.

Factors Influencing Maintenance of Antitoxic Immunity. M. Barr and A. T. Glenny.—p. 646.

Intestinal Rupture Following Non-Penetrating Injury. G. Flavell.—p. 649.

*Gynecomastia During Treatment with Amphetamine. P. H. Tooley and C. Lack.—p. 650.

Fibrocystic Disease of Pancreas in Infant. G. G. Jones.—p. 651.

Estimation of Ergothioneine in Urine by Paper Partition Chromatography. E. Work.—p. 652.

Gynecomastia During Treatment with Amphetamine. According to Tooley and Lack amphetamine sulfate has been recommended for a wide diversity of conditions, including depressive states, fatigue, epilepsy, narcolepsy, certain behavior disorders of children, dysmenorrhea, enuresis, migraine and obesity. Some male patients complained of bilateral, slightly tender, swelling of their breasts while they were taking amphetamine sulfate. The authors asked all male patients receiving this drug whether they had noted enlargement of their breasts. A surprising number admitted that they had noticed it. The authors regard it as unlikely that amphetamine sulfate has a direct effect, since it bears no chemical similarity to the sex hormones. It appears to them most probable that it acts at a pituitary hypothalamic level, leading to the increased production of estrin, probably by the adrenals, and/or a reduction in testosterone, with the result that the estrin-testosterone ratio is altered. This is purely speculative. The inference is that the effects described were due to an impurity in the amphetamine sulfate, which had considerable estrogenic potency. In the course of its preparation amphetamine sulfate passes through a chemical process in which substances closely related to the estrogens are formed.

Medical Journal of Australia, Sydney

1:333-368 (March 12) 1949. **Partial Index**

Pulmonary Infarction and Anticoagulant Therapy. A. W. Morrow.—p. 341.

Psychosomatic Aspects of General Medicine. H. R. Love.—p. 347.

Diagnosis of Eighth Nerve Tumor. G. Phillips.—p. 351.

Some Aspects of Subacute Bacterial Endocarditis. E. F. Gartrell.—p. 353.

Deutsche medizinische Wochenschrift, Stuttgart

74:417-448 (April 8) 1949. **Partial Index**

*Superfecundation in Human Beings. H. Heberer.—p. 417.

*Preliminary Examinations and First Results in Connection with BCG Vaccination of Children 6 to 14 Years of Age in a Rural District. F. Lütgerath, B. Bergmann and H. Stöppler.—p. 419.

Results of Treatment of Acute Pneumonias: Report on 1,431 Cases from 1936 to 1946. H. Hackerott.—p. 422.

Roentgenogram of Dental Focus of Infection. E. Fröhlich.—p. 426.

Advisability of Operation for Hallux Valgus. H. Richter.—p. 430.

Bacterial Flora in Gynecologic Operations. P. Bernhard.—p. 431.

Superfecundation in Human Beings.—Heberer differentiates between superfecundation and superfetation. Superfecundation results when as the result of different acts of copulation several ova maturing during the same period of ovulation become fertilized. Superfetation would result if an ovum from a later period of ovulation would be fertilized. The possibility of superfetation has been denied, even in the presence of a double uterus, since ovulation ceases during pregnancy. Superfecundation, however, is regarded as possible in human beings. The author reviews a lawsuit about the paternity of twins, in which it was contended, on the basis of blood group tests, that the defendant could not have been father of one of the twins, that is, that the twins must have had two fathers; and this in turn would prove the possibility of superfecundation in human subjects.

BCG for Protection Against Tuberculosis.—According to Lütgerath and associates vaccination against tuberculosis is becoming more urgent in Germany because of the increase in the tuberculosis morbidity in adults and children. The offer of the Red Cross of Denmark to perform vaccinations with BCG was therefore gratefully accepted. The authors report on the examinations made preparatory to such vaccinations and on the first results of the after-examinations in children 6 to 14 years of age. The percentage of natural infection is listed for the different age groups. It has reached 47 per cent in those 14 years of age. The authors stress the advisability of roentgenologic controls for children with positive reactions and believe that all inhabitants of the district should be subjected to examination before the roentgen screen, because in this way possible sources of infection would be detected. Particular attention should be given to bovine sources of infections, since the search for human sources frequently remains fruitless. There were practically no undesirable reactions from the vaccination. The vaccination pustules were of normal size. The reactions to patch tests following the vaccination were usually strong and must be regarded as the expression of a favorable allergic condition. Patch test controls should be made annually in order to obtain information about the duration of positive reactions and the duration of protection conferred by the BCG vaccination. In view of the excellent tolerance for BCG, the authors consider it advisable to extend this vaccination to other age groups.

Encéphale, Paris

38:97-144 (No. 3) 1949

*Electro-Encephalographic Study of Epileptic Cortical Foci. H. Gastaut and M. B. Dell.—p. 97.

*Treatment of Schizophrenia by Massive Withdrawal of Cerebrospinal Fluid Followed by Injection of Air. J. Borel and P. Poujol.—p. 108.

Postemotional Acute Porphyria; Exophthalmos; Extensive Paretic Syndrome with Psychic Disturbances. L. Marchand and J. de Ajuriaguerra.—p. 113.

Epileptic Cortical Foci.—Gastaut and Dell performed encephalographic studies on 700 patients with epilepsy. Records were made with bipolar leads. In 119 patients, 17 per cent, localized unilateral abnormality was observed. Thirty-one of them presented the symptomatic type of epilepsy, i. e., tumor or cranial traumatism, and were not included in the report. The remaining 88 patients with unilateral abnormality apparently were the "cryptogenic" epileptic type. In 62 of these the abnormality focalized in the narrow sense of the word, and in 26 it was localized in a limited region of one hemisphere. Spikes, complex spikes and sharp waves are the types of unilateral abnormality which may be observed in patients with focalized epilepsy. Delta waves and 2 per second alternating waves and spikes were observed also, but in patients with the "localized" type of epilepsy. The spikes and sharp waves practically always are produced by cortical or immediately subcortical lesions, such as corticomeningeal scars resulting most frequently from old truma, localized atrophic lesions and inflammatory, vascular or neoplastic lesions causing a highly localized cortical destruction. Among the focalized anomalies a focus with spikes or sharp waves constitutes the best indication for surgical intervention. The 2 per second alternating waves and spikes or degenerated waves were observed frequently with regional cortical atrophy or with porencephalic foci accompanied by evident clinical signs. Delta waves, when accompanied by spikes or sharp waves, indicate a localized cortical disturbance, degenerative or edematous, and the sharp waves indicate an adjacent or superimposed irritative focus. Two eventualities may be envisaged concerning the localized paroxysmal categories with harmonious monorhythmic or polyrhythmic waves: (1) Transitory paroxysms with fairly rapid waves often associated with a localized clinical attack. They constitute an electrical expression of this attack, thus assuming a great value for localization. (2) Repeated paroxysms with slow waves or alternating waves and spikes in the absence of any clinical manifestation, which are less valuable for localization.

Treatment of Schizophrenia.—Borel and Poujol treated 17 patients with schizophrenia by repeated withdrawal of 10 cc. of cerebrospinal fluid followed by injection of 10 cc. of air, with thiopental sodium anesthesia. The total amount of withdrawn cerebrospinal fluid and of injected air, respectively, varied from 60 to 100 cc. There were no untoward reactions. The duration of the disease in 9 patients was not more than thirteen months. There were 4 complete recoveries followed up for more than one year. There was persistent but only partial improvement in 1 patient, 1 recurrence after several months in another patient and 3 failures. The duration of the disease in 8 patients was two to seventeen years. There were 6 failures, and 2 patients had temporary recurrences, 1 after two years and the other after four years. The sudden disturbance of the dynamics of the cerebrospinal fluid may have its repercussions on the cerebral vascular system; the injected air may exert mechanical excitation of the walls of the third ventricle and thus may stimulate an inhibited function. The massive withdrawal of cerebrospinal fluid combined with electroshock and insulin treatment should be given a trial in cases of schizophrenia of less than two years' duration before the patient is considered incurable.

Nordisk Medicine, Stockholm

41:531-574 (March 25) 1949. **Partial Index**

*Tubular Nephritis. H. Bergstrand.—p. 531.
Small Heart. P. Dundas.—p. 536.
Combination of Psychotechnical Method and Electroencephalography. B. Bjerner and O. Steinwall.—p. 545.
Automatic "Respiration Exposer" in Roentgenography of Thorax in Infants. P. E. Heikel.—p. 546.
Status Asthmaticus in Adults Treated with Manual Compression of Thorax. L. Epstein.—p. 549.

Tubular Nephritis.—Bergstrand discusses proximal and distal tubular nephritis. He designates the renal changes characterized by degeneration of the tubular epithelium without notable involvement of the glomeruli as tubular nephritis rather than nephrosis, as the degenerative or necrotic changes may be followed by pronounced inflammatory reactions in the interstitial tissues. The clinical symptoms are oliguria or anuria with azotemia and sometimes increased blood pressure. The picture appears in many disorders which are followed by muscle or blood degeneration: after incompatible blood transfusion, in acute malaria due to Plasmodium falcifarum, grave burns with destruction of red blood corpuscles, heat stroke with excessive hemorrhage, traumatic and atraumatic ischemic muscle necrosis and intoxications which cause hemolysis or bleeding, and intoxications with certain substances known to cause blood or tissue necrosis, as sulfonamide drugs. There are generally more or less pronounced signs of shock. Pathologically the organs show capillary distention, frequent centrilobular liver necrosis, necrosis in other organs and hemorrhages in different organs. The renal cortex is usually pale and anemic and the parenchyma dark red and hemorrhagic. The changes are focal. Tubular nephritis is ascribed to toxic influences, acid urine and insufficient blood supply to the kidneys. All three factors may play a part. The most characteristic form of proximal tubular nephritis may be that caused by mercuric chloride intoxication. Intoxication with oxalic acid may cause this form of tubular nephritis. Administration of certain amino acids may produce similar changes.

Revista de la Asociación Méd. Argentina, Buenos Aires

63:53-90 (Feb. 15-28) 1949. **Partial Index**

*Experiments on Streptomycin. Resistance of Tubercle Bacilli. R. F. Vaccarezza, A. Centrángolo and R. Cucchiani Acevedo.—p. 53.

Tubercle Bacilli Resistance to Streptomycin.—Vaccarezza and collaborators carried on in vitro determinations of the sensitivity of tubercle bacilli to streptomycin in two series of 30 and 60 strains. Twenty-nine of the 30 strains of tubercle bacilli from patients who had not previously received streptomycin were sensitive to the drug in a concentration of 0.1 to 1 mg. per cubic centimeter of the culture medium, and 41 out of 60 strains of tubercle bacilli from patients in the course of streptomycin therapy were resistant to the drug in a dose of 10 mg. or more per cubic centimeter of the culture medium. Resistance to streptomycin occurred before 50 Gm. had been administered in 4 cases, before receipt of a total dose which varied between 50 and 100 Gm. in 16 cases and after administration of more than 100 Gm. in 21 cases. Late resistance appeared in 2 cases twenty-two days and four months after discontinuation of a total dose of 20 and 13 Gm., respectively. Determinations of the sensitivity of tubercle bacilli were repeated in 10 patients with resistant strains for a period of one to five months. Resistance to the drug persisted in all strains. In the group of patients with sensitive strains of tubercle bacilli who were receiving streptomycin, 1 patient had had a total dose of 200 Gm., 5 patients had had a total dose which varied between 150 and 200 Gm. and 7 patients had had a total dose which varied between 100 and 150 Gm. There was a correlation between the results of the bacteriologic research and of the therapeutic effect, namely, cure of 12 patients with sensitive strains and failure of the treatment of 40 patients with resistant strains. The treatment failed in 7 patients with sensitive strains. Improvement of a patient with a sensitive strain of tubercle bacilli progressed without interruption after the occurrence of resistance.

Revue d'Hématologie, Paris

4:1-174 (No. 1) 1949. **Partial Index**

Leukemia Associated with the Presence of Eosinophils? A. Piney.—p. 3.
Application of Examination of Blood Groups to Paternity Search. L. Hirszfeld and F. Milgrom.—p. 6.
Heredity of Blood Groups P in 85 English Families. Ruth Sanger. Sylvia D. Lawler and R. R. Race.
Human Blood Groups "Kell"; Gene Frequencies and Genetic Research. Ruth Sanger, Doreen Bertinshaw, Sylvia D. Lawler and R. R. Race. —p. 32.
*Results of Treatment of 160 Newborn Babies with Hemolytic Anemia by Exchange Transfusions. J. J. van Loghem and H. L. J. M. Bartels. —p. 36.

Exchange Tranfusions in Newborn Babies.—Van Loghem and Bartels treated 160 newborn babies with hemolytic anemia with repeated and massive replacement transfusions, using Diamond's technic but employing a rubber catheter instead of the plastic catheter. Heparinized blood was used in the majority of the cases. The catheter and the syringes must be washed regularly during treatment with a weak heparin solution to prevent the formation of clots. Thirty-six of the infants died, a mortality rate of 22.5 per cent. Seven of the deaths were not related directly to the hemolytic anemia. When these latter cases are eliminated, the mortality rate is 18.1 per cent. In the remaining 29 instances death resulted from kernicterus in 9, fetal dropsy in 3, incompatible blood in 3, hemorrhages in the visceral organs in 5, premature birth in 1 and belated treatment in 1; in 7 cases the cause of death was unknown. The mortality rate in the group of treated infants was compared with that of a group of infants with erythroblastosis fetalis in the same families who were not treated by exchange transfusions. The mortality rate in the latter group was 73.3 per cent for the infants with severe icterus and 63.5 per cent if those with mild icterus were included. The mortality rate was reduced from 63.5 per cent to 18.1 per cent by the application of exchange transfusions. It is the only treatment which has thus far proved effective.

Schweizerische medizinische Wochenschrift, Basel

79:237-260 (March 19) 1949

Instruction in Surgery. O. Schürch.—p. 237.
*Meningitis Myalgica; Serous Meningitis in Epidemic Myalgia. O. Gsell.—p. 241.
Experimental Studies Concerning the Nature and Pathogenesis of Angina Pectoris and Myocardial Infarction. S. Hirsch.—p. 245.
Progressive Defense Against Venereal Diseases. H. Rotter.—p. 249.
Arterenol, Hormone of Adrenal Marrow and Chemical Transmission Substance of Sympathetic Nerve Stimuli. P. Holtz and H. J. Schümann.—p. 252.

Serous Meningitis in Epidemic Pleurodynia.—Gsell reports 7 cases of serous meningitis complicating epidemic pleurodynia in 5 patients between the ages of 16 and 40 and in 2 children aged 5 and 7. These cases occurred in the Swiss canton of Saint Gallen during the summer and autumn of 1948. The term myalgic meningitis has been suggested for this type of virus meningitis. Serous meningitis may occur in single cases of familial epidemic pleurodynia as in 1 of the author's cases in a family of 10 with pleurodynia, or it may occur sporadically without additional incidence in the same household as in 4 of the author's cases. In all 7 patients the meningitis occurred during the second bout of the disease between the third and sixth day. The clinical picture corresponded with that of a more or less intensive meningitis without pronounced psychic changes. There were no encephalitic complications; the maximum cerebrospinal fluid cell count varied from 17 to 408. Neutrophils were predominant in the cerebrospinal fluid in the early stage and lymphocytes in a later stage. There was a slight increase in albumin content; the sugar content was normal. The blood picture showed a tendency to leukopenia. The blood sedimentation rate was only slightly increased. The duration of the meningitis varied from one to three weeks. All patients recovered without any sequelae. Treatment consisted of rest in bed, lumbar puncture and administration of analgesics. Chemotherapy and antibiotics are of no value. The increased incidence of epidemic pleurodynia in Central Europe during the last year is emphasized.

Strasbourg Médical

109:55-64 (Feb. 15) 1949

*Analytic Study of Problem of Hemogenia. R. Voegtlin and J. Cherrier.—p. 55.
Inflammation of Middle Ear and Digestive Disturbances of Suckling Babies; Therapeutic Indications. P. Rohmer, E. Schneegans and C. Wild.—p. 61.

Hemogenia.—Voegtlin and Cherrier report 2 cases of hemogenia, 1 in a man aged 34 with intestinal hemorrhages, secondary anemia and ecchymoses from the slightest contusion and a second in a woman aged 26 with menorrhagia, profuse hemorrhages after extraction of teeth, epistaxis, ecchymoses on the lower extremities and purpura on the upper part of the breast. Splenectomy was performed in both cases, resulting in disappearance of hemogenia. Eleven to twenty months after the intervention the number of thrombocytes was about the same as that before intervention. The results were identical in both patients, although they differed with regard to the clinical picture, the hematologic reaction immediately following the intervention, the lesions of the spleen and the bone marrow pattern. Thrombopenia is an epiphenomenon in the pathologic changes of chronic idiopathic thrombopenic purpura, which is essentially a vascular disease. In the majority of the cases the thrombopenia depends on changes in multiplication and maturation of the megakaryocytes, but there does not exist a specific pathognomonic type of cytologic change in the bone marrow and a single morphologic type of hemorrhagic spleen. Although splenectomy induces clinical improvement in hemogenia by restoring hemostasis and capillary resistance, it does not necessarily cause the return of the number of thrombocytes and the condition of the megakaryocytes to normal. The reticuloendothelial system after splenectomy exerts a vicarious action on the morphologic aspects of the blood and the blood-forming tissues which may make up partly or entirely for the absent spleen. The increase in the number of megakaryocytes in the bone marrow and the presence of forms with abnormal maturation are of definite aid in the diagnosis of Werlhof's disease and warrant a favorable prognosis for splenectomy.

Ugeskrift for Laeger, Copenhagen

111:139-164 (Feb. 10) 1949. Partial Index

*Sulfonamide Nephritis. R. Christensen.—p. 139.
.Popper's Operation for Otosclerosis. Results. I. P. Vald.—p. 145.
Use of Nitrogen Mustard. A. Videbaek.—p. 147.

Nephritis Due to Sulfonamide Drugs.—Christensen states that in the grave renal complications which may occur with sulfonamide drug therapy the clinical picture is characterized by shock, vomiting and renal symptoms in the form of oliguria, hyperazotemia, changes in the chemical content of the blood and albuminuria. There are torpidity and dulness with a rise in temperature and often conjunctival and cutaneous signs of hypersensitivity. Four cases of nephritis due to sulfonamide drugs are described. In 2 cases death occurred from uremia; 2 patients were discharged as subjectively well, but impairment of the renal function still persisting on control after four months show the grave damage that the kidneys are exposed to in intoxication due to sulfonamide drugs. The small dose of sulfonamide drugs which can cause the disorder suggest an allergic rather than a toxic pathogenesis. In the fifth case there were also torpidity and dulness together with decided edema; death was due to uremia. Microscopic examination did not show definite allergic changes such as were seen in the first 2 cases. The patient had received sulfonamide drugs for some time. The blood transfusion given immediately before the onset of the symptoms was accompanied by signs of incomplete compatibility. If the allergic inflammatory changes in the kidneys in the first cases are to be taken as a sign that the nephritis due to sulfonamide drugs is the result of hypersensitivity, the absence of these phenomena in the last case must point to lower nephron nephrosis resulting from the blood transfusion.

Wiener klinische Wochenschrift, Vienna

61:209-224 (April 8) 1949. Partial Index

*Vagotomy as Intervention for Alleviation of Pain in Inoperable Carcinoma of the Stomach. F. Mandl.—p. 209.
Choice of Indifferent Electrode or Electrode Distal to Heart in Thoracic Wall-Electrocardiogram in Man. W. Breu.—p. 211.
New Mechanism of Regulation for Coordination of Respiration and Circulation. H. Schröcksnadel.—p. 214.
Psychic Changes After Prefrontal Leukotomy. E. F. Pakesch.—p. 215.

Vagotomy in Inoperable Cancer of the Stomach.—Mandl performed vagotomy in 4 patients, 3 men and 1 woman between the ages of 59 and 71, with inoperable carcinoma of the stomach. Gastrectomy was not feasible in any of the 4. There was no stenosis. Relief of pain resulted in all. Except for a temporary increase in weight of 4 to 5 Kg. the course of the disease was not changed. The temporary improvement was due to the pain-alleviating effect of the vagotomy and to the return of appetite. Postoperative disturbances, such as diarrhea, did not occur. In the absence of stenosis, vagotomy is to be preferred to any other palliative intervention on the stomach. In the presence of stenosis considerable improvement in inoperable carcinoma of the stomach may be expected from vagotomy combined with gastroenterostomy. In 1 patient the repugnance to meat disappeared after the vagotomy. The alleviation of pain resulting from vagotomy may be explained by the simultaneous interruption of the splanchnic nerve, for, in cutting the right vagus nerve, one may also sever sympathetic fibers leading to the semilunar ganglion. There is also the possibility that spasms of segments of the gastric wall may be responsible for the pain of carcinoma of the stomach. The occurrence of atony after vagotomy may explain the pain-alleviating effect of the operation in cases of carcinoma of the stomach and in cases of ulcer.

Book Notices

Current Therapy 1949: Latest Approved Methods of Treatment for the Practicing Physician. Howard F. Conn, M.D., editor. Consulting Editors: M. Edward Davis and others. Cloth. Price, $10. Pp. 672. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1949.

This book represents an attempt to provide for the practitioner the latest method of treatment for a variety of diseases. A board of twelve consulting editors and over two hundred physicians have contributed to the book. The contents are divided into fourteen sections: Infectious diseases, diseases of the digestive system, diseases of metabolism and nutrition, diseases of the endocrine system, diseases of the urogenital tract, venereal diseases, diseases of allergy, diseases of the skin, diseases of the respiratory system, diseases of the cardiovascular system, diseases of the blood and spleen, diseases of the nervous system, obstetric and gynecologic diseases and diseases due to physical and chemical agents. The discussions are brief, with a minimum of wasted words. However, the essentials of the method of treatment proposed by the contributors are sufficiently complete for the reader to obtain a clear understanding of the therapeutic problem. This book does not present a review of the literature; it presents "a method that has been endorsed and is currently used by a competent authority." In many instances the methods of two or more authorities for treating a single disease have been included.

Essentials of Gynecologic Endocrinology [with Sections on the Male]. By Gardner M. Riley, Ph.D., Assistant Professor of Obstetrics and Gynecology, University of Michigan Medical School, Ann Arbor, Mich. Paper. Price, $3. Pp. 205, with 35 illustrations. Caduceus Press, Box 17, Ann Arbor, Michigan, 1948.

This volume includes three sections: (1) Endocrine Physiology, (2) Clinical Aspects and (3) Diagnostic Procedures, Sex Hormone Chemistry and Endocrine Preparations, all pertaining to the function and dysfunction of the female reproductive system. There are included also chapters on the endocrine glands other than sex, such as the adrenals, thyroid and pancreas, and also chapters on the clinical aspects of other endocrine diseases, such as Symmond's disease, Cushing's syndrome and disorders of the testes. Certainly, knowledge of the male endocrine dysfunctions is necessary in the treatment of sterile couples, but the other discussions are obviously not essential in a book on gynecologic endocrinology. The material in this volume is concentrated and may be considered to be an excellent outline of our knowledge of gynecologic endocrinology. The descriptive material is too scant for beginners such as students but more appropriate for physicians who have some knowledge of the subject and who would appreciate a condensation for review purposes. It is especially suited for gynecologists who will find this a handy volume with which to refresh their knowledge of the sex hormones and functional gynecologic disorders. There is a bibliography at the end of each chapter for reference purposes.

On the Contributions of Hugh Owen Thomas of Liverpool, Sir Robert Jones of Liverpool and London, John Ridlon, M.D., of New York and Chicago to Modern Orthopedic Surgery. By H. Winnett Orr, M.D., Chief Surgeon, Nebraska Orthopedic Hospital, Lincoln, Nebraska. With a Supplement on Ridlon and His Share in Moulding Orthopedic Surgery. By Arthur Steindler, M. D., Professor of Orthopedic Surgery, State University of Iowa Medical School, Iowa City, Iowa. Cloth. Price, $4.50. Pp. 253, with 23 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1949.

This book is attractively published. The quality of the paper and the type face make for easy reading. Following a short preface by the author are brief biographic sketches of Thomas, Jones and Ridlon. The main text is mostly excerpts from the writings of Hugh Owen Thomas, apparently selected to support the author's own theories on rest as a therapeutic agent. A supplement by Steindler of eighteen pages on Ridlon and his share in molding orthopedic surgery comprises the last chapter. This presents a clear picture of Ridlon's position in American orthopedic surgery. The book concludes with an annotated bibliography composed mainly of references to the writings of Thomas, Jones, Ridlon and the author.

Studies of Chronic Pyelonephritis with Special Reference to the Kidney Function. By Flemming Raaschou. Translated from the Danish by W. E. Calvert. Paper. Price, 20 Danish crowns. Pp. 260, with 61 illustrations. Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen, 1948.

In the past fifteen years, as a result of the studies of Longcope and of Weiss and Parker, there has been wider recognition of the considerable frequency and great clinical importance of chronic pyelonephritis—a condition previously rarely diagnosed during life and often even misinterpreted at necropsy. This first presentation of detailed studies of renal function in chronic pyelonephritis by modern methods is a welcome addition to the literature on the disease, hitherto largely etiologic, anatomic and clinical. Included are systematic measurements of renal blood flow, glomerular filtration, iodopyracet tubular maximum (Tm), self depression and saturation limits for iodopyracet, urea clearance, urinary concentration and plasma protein fractions.

The monograph opens with a description of the results in 202 autopsies in which chronic pyelonephritis was present. Indicative of the frequency of chronic pyelonephritis is the fact that these constituted 5.6 per cent of all autopsies. Uremia was the cause of death in a third of the cases and hypertension in a sixth. Of special interest, the correct diagnosis was established during life in only 11 of 66 cases of chronic pyelonephritis sui generis; renal disease of any sort was diagnosed in only 21 of the 66 patients. The reviewer believes that the author's statement that clinicians do not have the disease sufficiently in mind also applies in this country.

The remainder of the book is devoted to a detailed study of renal function in chronic pyelonephritis. Renal blood flow, filtration and iodopyracet Tm are all diminished; the fall in iodopyracet is relatively greater than that in filtration. The numerous observations on glomerular and tubular functions do not yet appear to be of substantial value in the differential diagnosis of pyelonephritis or as a guide to treatment. However, they are of much interest to the student of the pathologic physiology of the kidney; as far as the reviewer is aware, similar data on renal function in pyelonephritis are not elsewhere available.

Kayne, Pagel and O'Shaughnessy's Pulmonary Tuberculosis: Pathology, Diagnosis, Management and Prevention. Revised and Partly Rewritten by Walter Pagel, M.D., Pathologist, Central Middlesex County Hospital, London: F. A. H. Simmonds, M.A., M.D., D.P.H., Medical Director, Clare Hall County Hospital, Middlesex, N. Macdonald, M.B., M.R.C.P., Physician to the Chest Clinic, Redhill County Hospital, Middlesex, and L. Fatti, F.R.C.S., Thoracic Surgeon, Hillingdon County Hospital and Harefield County Hospital, Middlesex. Second edition. Cloth. Price, $18.50. Pp. 720, with 268 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1949; Amen House, Warwick Sq., London E.C. 4, 1948.

The second edition of this text book on tuberculosis is particularly welcome, for it has been considered a standard reference for information in the many fields concerned in tuberculosis. Since the printing of the first edition, in 1939, two of the original three authors, Kayne and O'Shaughnessy, have died. As the new authors point out, nine years is an unusually long interval in a period so fruitful in the development of knowledge of tuberculosis and so critical in the problems raised by tuberculosis in a world much of which has been devastated by war and famine. Originally the work was intended to combine in one volume a presentation of the pathologic, clinical and surgical aspects of pulmonary tuberculosis based largely on the individual conceptions of the authors, with the addition of essential references to general literature on the subject. This plan has been preserved in the second edition, which has been prepared by a group of authors who have worked closely with each other and with the remaining author from the original group. Thus, fortunately, the book does not represent a mere compilation of the literature, but rather the critical insight of a group of specialists on the many interrelated problems of the disease. In bringing it up-to-date they have in large measure rewritten the book and made it useful not only to specialists in the different fields of tuberculosis but to all who wish to inform themselves on developments in the understanding of pathogenesis and therapy. The principal development in studies on the pathogenesis of tuberculosis in recent years has been with respect to the origin and development of primary tuberculosis in adolescents and adults. There may be a difference of opinion with some of the conclusions, such as the statement that primary infection in adults is basically identical with that in childhood, and some objection to the criteria for the diagnosis of primary tuberculosis in adults. So, too, in the opinion of many American pathologists and epidemiologists, the stress on the endogenous origin of tuberculosis in the adult may seem disproportionate. Dr. Pagel has studied a vast amount of material with great care, and his conclusions are correspondingly valuable. In the section on diagnosis, attention is called to the growing responsibility of private physicians in determining the activity of the many lesions of questionable significance detected in the course of mass roentgen surveys. It is unfortunate, but perhaps inevitable, that the section on chemotherapy of tuberculosis is far from up-to-date. Only five years have elapsed since streptomycin was first introduced in the therapy of tuberculosis, and no textbook requiring meticulous preparation over a period of years could possibly keep up with developments in this field. In this book the streptomycin treatment of tuberculosis is covered in an appendix, which gives an excellent review of advances in this field up to 1947. Another appendix serves a useful purpose in summarizing the classifications of tuberculosis used in Great Britain and the United States. The book is highly recommended to all students of tuberculosis both as a thoughtful and interesting compilation of established knowledge on the subject and as a stimulus to further work in less developed fields.

Introductory Foods. By Osee Hughes. Second edition. Cloth. Price, $4.25. Pp. 575, with 132 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1949.

Much sound, helpful general information on basic chemistry of foods is presented in this revision of a 1940 edition. Among specific chapters that have been expanded are those on food preservation and meal planning. Also, the number of illustrations has been increased, as well as the lists of recipes and methods of using them. Perhaps greatest appeal of the book so far as the physician is concerned is the calm, practical manner in which the author "debunks" the many popular superstitions regarding eating practices, such as the fear of eating foods that have been left standing in cans, the belief that white eggs are superior to brown eggs and the apparently widespread fear that aluminum cooking utensils are dangerous to health. Especially noteworthy is the discussion of coffee in a chapter on beverages. The subject of meats and meat cookery is handled in an outstanding manner in a special chapter.

Every conceivable aspect of food is included, with special chapters on frosted foods, salads and salad dressings, batters and doughs, food preservation, meal planning and meal service. In the last two, practical outlines are provided, with suggested meal patterns and special problems on marketing, utensils and work plans. At the close of each chapter are lists of suggested references for those interested in extended study. Compact data on weights and measures, temperature control in food preparation, definitions and descriptions of terms commonly used in food preparation, and general procedures are provided in four appendixes.

This volume can be recommended without reservation by physicians to patients interested in learning facts about food and its proper preparation. The book also provides a helpful brush-up for off the cuff answers to food questions, silly or otherwise, from patients.

The Hormones: Physiology, Chemistry and Applications. Volume I. Edited by Gregory Pincus and Kenneth V. Thimann. Cloth. Price, $13.50. Pp. 886, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1948.

The first volume of this two volume book is devoted to the information on hormones acquired relatively recently. It consists of chapters on hormones in plants, insects, crustaceans and mammals. The chapters are devoted to data on the chemistry and physiology of the endocrine secretions in plants and lower animals, the chemistry and physiology of the internal secretions of the parathyroid and pancreas, the physiology of lactation and mammary growth, the chemistry and assay of estrogens and the chemistry of androgens, progesterone and anterior pituitary hormones.

Volume II is concerned more with the physiology of the various mammalian hormones. Volume I contains a tremendous mass of data, much of which has been accumulated in the past ten years. The advances in the chemistry and physiology of the endocrines can not escape being most impressive when one compares the strides made during this period over the preceding ten years at the beginning of which endocrinology was in its infancy. The authors of the various chapters are recognized authorities on their respective subjects and are all major contributors to the experimental work in these fields. The volume is of classic academic proportions and should serve most valuably the research worker in endocrinology and the specialist in clinical endocrinology who is interested in maintaining an understanding of the basic developments in the field of hormones. Such readers would do well to peruse the chapters on the hormones of the lower animals and plants, which are both fascinating and instructive and may create additional stimulus to the scientific investigations in higher animals.

Les cahiers d'hématologie. Premier cahier: Le sang et les organes hématopoïétiques normaux. I: Cytologie descriptive; II: Techniques d'examen. Par Jacques Mallarmé et Jacques Messerschmitt. Paper. Pp. 158, with illustrations. *Société d'Edition d'Enseignement Supérieur,* 99 Boulevard Saint-Michel, Paris 5e, 1948.

This is the first of a series of publications on the study of normal and pathologic conditions of blood, under the editorship of Jacques Mallarmé and Jacques Messerschmitt; the plans may be somewhat pretentious. The pages are large (8½ by 11 inches); the typography is good, and the illustrations are interesting. There are five plates, two in black and white, and three in color. The color work is poor by our present day standards, but the plates amply illustrate the points of the text, and have probably been printed much more reasonably than would have been possible in this country. The text, evidently prepared for students and general practitioners, is elementary. This first number deals merely with descriptive cytology and technics. There is much lacking, and some of the researches of the past twenty years in this country are not mentioned. This is especially noticeable in the description of technics for the determination of hemoglobin. Mention is not made of the use of photoelectric colorimeters. A few technics developed in Europe recently and not familiar to us in this country, are described. For example, a diffractometric method of directly measuring the diameter of erythrocytes, which was devised by Tzanck and Bessis, is illustrated and briefly described.

For the American reader the chief interest of this series of publications will be as a work of reference to articles in the French literature on hematology.

Introduction to the Szondi Test: Theory and Practice. By Susan Deri. With a foreword by Dr. Lipot Szondi. Cloth. Price, $5. Pp. 354, with 19 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1949.

Psychiatrists and psychologists who are on the *qui vive* for the latest in psychometric technic have undoubtedly become acquainted with the Szondi Test which consists of 48 photographs of persons with a variety of mental diseases. Until Deri's book was published the only guide to the administration and interpretation of this test was Szondi's *Experimentelle Triebdiagnostik* which even in the hands of the skilled translator was found difficult to interpret.

Mme. Deri's contribution should not be considered a translation of Szondi's books. Comparatively little attempt has been made to present Szondi's theory of "the psychologic function of the latent recessive genes," which forms the basis for his test. For these, one must go to Szondi's "Schicksalanalyse." Instead, the present volume represents the author's attempt to interpret each of the basic test factors underlying this test. In addition, the psychologic assumptions contributing to this interpretation are indicated.

Whether or not one can go along with Szondi's hypothesis of the latent genetic factors which influence our spontaneous selection of photographs, Deri's presentation does evidence a good deal of plausibility, and in general her insistence on the interpretation of the selective reactions of subjects in terms of a constellation of related personality vectors appears to be sound.

The test itself is administered by supplying the subject with independent presentations of six sets of eight photographs. Each set contains a picture of a homosexual, a sadist, an epileptic, a hysteric, a catatonic schizophrenic and a manic-depressive manic subject. As the subject is presented each set of eight pictures, he is instructed to select the two he "likes the most" and the two he "dislikes the most." Having gone through this process for each of the six series of photographs, the results are graphically recorded. The test is repeated at twenty-four hour intervals for six days or more. Time limits between tests are not absolute but should be within a day whenever possible.

The principles of interpretation stressed by Deri are briefly these: (1) The eight diagnostic factors or categories in the test correspond to eight different "need-systems" in the subject. (2) The subject selects the photographs on the basis of the relationships between the factor represented in the photograph and his own need as reflected in psychodynamic tensions. (3) A high frequency of choices from one category represents a corresponding need in strong tension. (4) Low frequency or absence of selection of a category indicates freedom from a state of tension in that facet of personality.

Using these premises, Deri explains and interprets the various possible weighting of categoric choices. The interrelationships of the categories selected with each other are stressed, and the clinical use of the test is emphasized by the analysis of numerous profiles attained by subjects on this test.

This manual will prove useful to the serious worker with projective technics and is a great aid in overcoming the difficulties that some may have had with Szondi's own writings.

Atlas der Augenkrankheiten: Sammlung typischer Krankheitsbilder mit kurzen diagnostischen und therapeutischen Hinweisen. Von Dr. Rudolf Thiel, ord. Professor an der Universität Frankfurt a. M. Fifth edition. Boards. Pp. 225, with 634 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart O, 1948.

This atlas, which first appeared in 1936, continues to be one of the best collections of colored illustrations of diseases of the eye. The reproductions are not as good, however, as in the first edition. One of the best features is a brief summary in each subject, which includes the anatomy, pathology and, in many cases, diagrams of operative procedures. This edition has a wealth of new material which will make it well worth while purchasing even for those who already have the first edition. It seems a shame that we cannot produce books of this sort in America without prohibitive cost.

The Basis of Chemotherapy. By Thomas S. Work, B.Sc., Ph.D., and Elizabeth Work, B.A., Ph.D. Cloth. Price, $6.50. Pp. 435, with 42 illustrations. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y.; Oliver & Boyd, Ltd., Tweeddale Court, 14 High St., Edinburgh 1, 1948.

The primary objective of the authors is "to focus attention upon the modes of action of drugs rather than upon the synthesis of ever more variants on their chemical structure." In this they have succeeded. They restrict the term chemotherapy to the chemical treatment of diseases of microbial origin. The authors have provided excellent background material which can serve as a basis for determining the rationale of chemotherapy. Stress is placed on the role of enzymes, which is consistent with current knowledge of drug action. Included are chapters on cell metabolism, essential metabolites, enzyme inhibition, drug antagonism, drug resistance and the relation of structure and activity of drugs. While much of the information may be too technical, the book nevertheless serves as a source of information for those who desire a better understanding of the role of chemotherapy in the control of disease.

An Elementary Atlas of Cardiography: An Introduction to Electrocardiography and X-Ray Examination of the Heart. By H. Wallace-Jones, M.D., M.Sc., F.R.C.P., E. Noble Chamberlain, M.D., M.Sc., F.R.C.P., and E. L. Rubin, M.D., F.F.R., D.M.R.E., Liverpool, England. Incorporating the third edition of "Electrocardiograms." Cloth. Pp. 108, with 100 illustrations. John Wright & Sons, Ltd, 42-44, Triangle West, Bristol 8, 1918.

This small volume is essentially all that is claimed for it. It is an attempt to minimize the detail the student should learn in this special subject. The description of electrocardiography and the illustrative electrocardiograms are sufficient to explain the basic principles. It probably is too elementary to appeal to the American medical student. The section on radiography of the heart and great vessels is well worth the student's time.

The 1948 Year Book of General Therapeutics. Edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P., Senior in Medicine, Southern Baptist Hospital, New Orleans. Cloth. Price, $4.25. Pp. 480, with 60 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1949.

Included in this volume are discussions of tests, new devices and technics, sulfonamide drugs, penicillin, streptomycin and other antibiotics, bacteriostatic agents, amebicides, antimalarials, antirheumatic drugs, antibodies and antigens, blood restoratives, vitamins, protein and amino acid therapy, hormones, anesthetics, sedatives, hypnotics and antispasmodics, antithyroid drugs, histamine and antihistaminic agents, drug treatment of headache, drugs acting on the heart and blood vessels and treatment of malignant conditions. Those who do not need an introduction to this book will find the current volume as useful as the preceding editions. Others who for the first time become familiar with this collection of abstracts or condensations of published articles and the accompanying editorial notes will find much useful information on current therapeutic procedures.

Die Permeabilitätspathologie als die Lehre vom Krankheitsbeginn. Von Prof. Dr. Hans Eppinger. Cloth. Price, 29.40 schillings. Pp. 755, with 145 illustrations. Springer-Verlag OHG, Mölkerbastei 5, Wien 1, 1949.

This book represents a much enlarged edition of the previously published monograph of this author on serous inflammation. Additional observations include studies with fluorescent microscopy, investigations on hepatic diseases derived from experiences during the war and studies on renal diseases. In the original publication, considerable emphasis was placed on the escape of plasma proteins into the tissue spaces and on the sequelae supposedly resulting from this escape. Much importance was attached to this serous inflammation (a name derived from Roessle) in various parenchymal organs. In the present enlarged treatise, in addition, the invasion of the parenchymal cells themselves by plasma proteins is stressed. These shifts in plasma proteins caused by altered permeability of the cellular membranes and capillaries are considered important in the pathogenesis of many diseases. Disturbances of the permeability of cellular and capillary membranes are considered the initial processes of many pathologic conditions. Morphologic and functional alterations in renal, hepatic, cardiac, gastrointestinal and rheumatic diseases are cited as examples. The study contains much useful information derived from various clinical, histologic and experimental observations. Many of the conclusions are a tribute to the originality of the author. Others, however, are based on assumptions and speculations rather than on correct interpretation of experimental and clinical observations. This final work of Eppinger, which appeared after his death, may stimulate thinking and investigation in various fields, as did his previous publications.

Posttraumatic Epilepsy. By A. Earl Walker, M.D., Professor of Neurological Surgery, The Johns Hopkins University, Baltimore, Md. Publication Number 20, American Lecture Series. A Monograph in American Lectures in Surgery. Cloth. Price, $2.75. Pp. 86, with 20 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1949.

This is an excellent short account of an approach to focal cerebral seizures resulting from trauma in adult life. Dr. Walker was charged with the surgical treatment of seizures among the war wounded of the United States Army, and this volume is largely a condensation of that experience. The scope of the book does not therefore completely fulfil its title, and some aspects of post-traumatic epilepsy (in particular those referring to injury at birth or in childhood) are omitted. This in no way detracts, however, from the way the author has treated the material.

After stating the problem and discussing factors of etiology and pathogenesis, the author gives an account of the electrographic manifestations of this disorder. He has perhaps approached these with more insight than he has the clinical aspects of the attacks. Chapters on medical and surgical management are well done, and the latter alone would justify the book.

The monograph will find wide appeal among both students and practitioners and among those more intensively occupied with the problems of focal epilepsy.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

DISCOMFORT FOLLOWING BOWEL MOVEMENTS

To the Editor:—A 30 year old white woman complains of nausea, abdominal discomfort and slight flatulence following bowel movements. Her bowel movements are fairly infrequent (i. e., every four or five days). The distress comes after variable periods of time following evacuation, or even just prior to the time, and lasts about twenty-four to forty-eight hours. Other symptoms are occasional sharp pain in the chest and bilateral headaches. The patient is thin and inclined to be nervous. She frequently becomes tearful for no apparent reason. There does not seem to be any current emotional disturbance or conflict. Results of physical examination are normal except for lateral displacement of the uterus, as indicated by the pointing of the cervix toward the patient's right and visceroptosia for which she wears a spinal appliance with no appreciable relief. The basal metabolic rate is —30 per cent. The patient is getting thyroid. The blood cell count reveals slight anemia, and liver and iron are being given by mouth and injection.

M.D., Pennsylvania

Answer.—It seems clear that at least one problem is the patient's unstable emotional makeup. Whether this is the only problem remains to be established. Complete diagnostic studies should be performed, including roentgenograms of the chest, stomach and colon, examination of the stools for occult blood with the patient on a meat-free diet and a proctoscopic examination. If the history or neurologic observations suggest an organic explanation for the headaches, roentgenograms of the skull, visual field measurements and spinal fluid examination may be necessary. If there are no significant findings, symptomatic therapy should be administered. The spinal appliance may be discarded, for the visceroptosis is undoubtedly unimportant. Surgical measures to correct the displaced uterus are to be avoided. A bland, low residue diet should be given, along with a sedative and an antispasmodic, such as phenobarbital, 0.015 or 0.03 Gm., and extract of belladonna, 0.0075 Gm., three or four times daily. Reclining for half an hour or so with a heating pad applied to the abdomen after bowel movements may make the patient more comfortable. Although myxedema may not be present, it will probably do no harm to continue small doses of thyroid extract for the present.

The psychiatric aspects should be investigated further.

AURALGAN® IN CHILDREN

To the Editor:—*I am concerned over the widespread use of auralgan® (about 6.3 Gm. antipyrine and 1.7 Gm. ethyl aminobenzoate in 100 cc. dehydrated glycerol) for the elimination of ear ache in children. Is there a transformation of the normal tympanic sheen and if so how does this affect further examination of the drum? Can an ear drum rupture painlessly because of the use of auralgan® and would such morbidity be considered preventable? Does an ear drum which has ruptured spontaneously prove to be more susceptible to reinfection during future infections of the upper respiratory tract?*

Vincent E. Romano, M.D., Bristol, Pa.

Answer.—Auralgan® will somewhat diminish the normal tympanic membrane sheen. This must be taken into consideration when evaluating the progress of an otitis media in which auralgan® has been used. The use of the preparation would not be likely to increase the probability of spontaneous rupture of the tympanic membrane. The fact that an ear drum ruptures spontaneously does not in itself increase the susceptibility of that ear to future reinfection. However, early spontaneous rupture might indicate high virulence of the infecting organism or poor ability of the patient to combat the infection. The likelihood of reinfection is increased by the presence of local predisposing factors such as obstructing lymphoid tissue at the tubal orifice, sinusitis or allergy.

SENSITIVITY TO COTTONSEED

To the Editor:—Is a patient who shows a positive skin reaction to cottonseed likely to be sensitive to foods made from cottonseed oil?

M.D., Ohio

Answer.—The question of whether or not cottonseed oil will be tolerated by the cottonseed-sensitive patient (as based on the evidence of skin tests) is not yet a completely closed matter. The evidence indicates that cottonseed oil should be and presumably is free from cottonseed protein residue capable of inducing an allergic reaction in most, if not all, cottonseed-sensitive patients.

CANCER OF THE THYROID

To the Editor:—Pleaes let me know the status of isotopes in the treatment of cancer of the thyroid? In a woman 26 years of age, I found a small adenoma with some invasion of the adenoma capsule. It was diagnosed as papillary adenocarcinoma grade I. I did a subtotal lobectomy, the adenoma being surrounded by thyroid tissue. Do you feel that there is any further treatment necessary in such a case?

R. E. Jernstrom, M.D., Rapid City, S. D.

Answer.—Iodine ^{131}, the eight day isotope of iodine, appears to be the treatment of choice for carcinoma of the thyroid gland, particularly if there are known metastases. Early workers were frequently disappointed with the action of this agent because of failure of the metastatic tissue to collect radioiodine in sufficient concentration. Continuing studies have shown that several measures may influence this condition favorably. The most promising results have been obtained with the use of the thyrotrophic hormone of the pituitary, preliminary ablation of the thyroid gland and repeated administration of large doses of radioiodine even when evidence of good concentration is lacking.

With respect to the case cited, there does not appear to be any indication for further therapy at present. In general, thyroid adenomas of the type described tend to be well circumscribed, largely benign lesions. The extensive resection with demonstrable normal tissue surrounding the tumor should be adequate therapy. Most workers with experience in the use of radioiodine would not advise it for such a patient. "Tumor doses" of radioiodine would necessarily produce complete myxedema. This result would be acceptable only when a highly malignant tumor was present; it would not be justifiable in the patient described.

RHINITIS FOLLOWING EXPOSURE TO NEWSPAPERS

To the Editor:—A 43 year old patient has vasomotor rhinitis whenever he reads a newspaper. Magazines which have paper with a smooth finish do not cause any symptoms. Desensitization with house dust has given him some relief. Is there anything in the paper used in newspapers that is not present in that used in magazines which might cause allergic symptoms of this kind?

M.D., New York.

Answer.—The type of manifestation described is not uncommon on exposure to newspaper, although skin reaction to extracts made from the paper and to some of the inks used in printing may be negative. There are several possible explanations of this discrepancy: The proper raw materials may not be available for testing; manufacturers hesitate to discuss their processes and ingredients, and thus the testing materials available may be incomplete; the substance to which the patient is allergic may not produce a skin reaction, which is particularly likely if the allergenic substance is a simple chemical rather than a protein, and the substance producing the symptoms may be a chemical irritant rather than an allergen. In other words, the patient may be showing an allergic response to another substance, from which he normally has little, if any, trouble. In this instance, the exciting factor disturbs the tissues, thus acting as a nonspecific cause in precipitating signs of allergy.

The second possibility offers the most likely explanation. Occasionally the vegetable gum used in the spray for drying the ink may be responsible for allergic symptoms. This explanation, however, does not apply in the majority of cases. Information on the differences between ingredients of newspapers and magazines are not available. However, it is doubtful that there is a distinct difference in patients' reactions because of such differences. It is more likely that the freshness of the one as compared with the age of the other is the relevant difference, since it is a common experience that patients complain of symptoms from fresh newspapers and frequently say that they can read old ones without ill effect.

POSSIBLE MENTAL RETARDATION

To the Editor:—*A 3½ year old boy does not speak but appears intelligent. He makes noises to direct attention, cries loudly when hurt and has a vicious habit of biting his playmates. He has a history of epileptiform seizures, during which he froths at mouth, has convulsive movements of his limbs and becomes unconscious. His attacks are preceded by screaming.*

M.D., New York.

Answer.—The repeated convulsions require the diagnosis of epilepsy, and the failure to speak without deafness suggests mental retardation. Both might be the results of congenital brain defect or of some acquired condition, such as birth injury or encephalitis. Additional items of evidence needed for establishing a cause are: family history of epilepsy or of mental defect, personal history of brain damage, electroencephalogram and examination by a child psychologist.

TRICHLOROETHYLENE POISONING

To the Editor:—A 28 year old industrial worker complains of anorexia, weight loss and burning of the hands and feet. Results of physical examination, blood cell count and urinalysis are within normal limits. He has been working on a "degreasing" operation, using a degreasing solvent which apparently has trichloroethylene as its base. The burning of his hands increases when he gets close to the vapor (he does not wear gloves). The present symptoms are of three weeks' duration, although he has worked with the solvent on and off for the past year. What are the symptoms of industrial trichloroethylene poisoning, and are this man's symptoms compatible?

M. D., Ohio.

ANSWER.—Trichloroethylene ($CHCl{:}CCl_2$) is a chlorinated hydrocarbon of known toxic properties; it is about one half as toxic as carbon tetrachloride or chloroform. After exposure to vapors at concentrations above (about) 100 parts per million, there may promptly arise dizziness, nausea, vomiting, headache, impaired coordination and a general state similar to alcoholic intoxication. Loss of weight due to anorexia may appear in time. Usually, manifestations are acute and fleeting, but on rarer occasion damage may be wrought on the liver, kidneys and heart. The chief point of attack is the central nervous system, and unconsciousness may promptly arise from gross exposure. The temporary action of this substance is indicated by the fairly widespread practice of using trichloroethylene as a general anesthetic, such as in obstetric delivery. In high concentrations this chemical will degrease or defat the skin, paving the way for dermatitis. There is some reason to believe that passage through the intact skin may take place, so that protection of inhalation may not fully insure its not entering the body. The mentioned manifestations may represent a mild degree of damage from the substance under discussion. The fact that symptoms appeared only three weeks before the date of inquiry (June) is in keeping with the observation that vaporization is facilitated in hot weather. The standard equipment of the company is of high order, but however well operated and maintained the equipment, some escape of vapors may arise. The Ohio State Department of Health is qualified and equipped to make suitable tests for determining the exposure level to trichloroethylene in varying work circumstances.

VITILIGO

To the Editor:—Is there any way to prevent a small depigmented area of skin from spreading to a large area. In this particular case, there are large areas on the trunk and a small area is starting on the face.

Karlton H. Kemp, M.D., Texarkana, Ark.

ANSWER.—This is undoubtedly a case of vitiligo. The disease tends to progress to a certain point and then remain more or less stationary. It is impossible to predict the final extent of the depigmentation in any patient. Treatment has been unsatisfactory. Use of ultraviolet rays, especially with the water-cooled lamp, has been reported successful in some cases. Use of ultraviolet rays together with gold salt solutions intravenously have helped others. Still other methods which have caused improvement at times are freezing with solid carbon dioxide and the application of 10 per cent alcoholic solution of bergamot oil together with exposure to ultraviolet rays. The lesions may be made less noticeable by bleaching the hyperpigmented borders. The depigmentation may be masked by applications of dilute solutions of walnut juice or similar preparations. It may be best to treat the patient by convincing him that the disorder is neither harmful nor objectionable.

CUNNILINGUS

To the Editor:—A married female patient is concerned about the morality of cunnilingus. This act is performed on the patient by her husband at his wish at infrequent intervals as part of preliminary "love play" and is followed by normal intercourse. She admits that the practice is pleasurable, but she feels considerable guilt that it is one of perversion and has asked my opinion. This matter is not discussed at any length in any of the books at my disposal. What is the concensus in this matter?

M.D., Colorado.

ANSWER.—Considered from the point of view of psychopathology cunnilingus should not be regarded as a perversion or abnormal if it is a part of the forepleasure or preparation for normal intercourse and not a substitutive act. From the moral standpoint the sense of guilt in connection with it arises from the common feeling that the sexual parts, no matter how completely cleansed, are still unclean rather than from any essential immorality of this practice when it is only a part of the love-making of a married couple preparatory to normal intercourse.

TASTE ABERRATION AND SORE TONGUE

To the Editor:—I have a patient 60 years old who complains of a salty, bitter taste in her mouth and a sore tongue of two years' duration. I am unable to see anything on her tongue. I have given her phenobarbital, triple bromides and vitamin B complex. Please let me know what to do.

J. O. Helm, M.D., New Florence, Mo.

ANSWER.—The points which should allow a diagnosis to be made are a sore tongue and a taste aberration of two years' duration in an apparently healthy woman aged 60 years, with no visible signs of pathologic changes of the tongue. If the tongue is actually sore and tender, glossitis is indicated; if the word "sore" means soreness or burning, there need not be a local cause for the symptoms. The salty, bitter taste could be due to glossitis, with its local effect on the taste buds. It may occur with little or no inflammation. The most probable local causes of such glossitis are a vitamin deficiency, a dental change and/or a low grade infection.

The vitamin deficiency is almost invariably of the B complex; it may be multiple, with a lack of thiamin, riboflavin, nicotinic acid or B_{12} factors. One should first test for pernicious anemia by a blood cell count and an analysis of the gastric acidity (including the use of histamine); suitable treatment, with a liver extract or the newer vitamin B_{12}, can then be used if indicated. If a secondary microcytic anemia and achlorhydria are present, the condition could be achlorhydric anemia. It is also possible to have anemia and glossitis, due to iron deficiency, which responds to administration of iron. The diagnosis of deficiency of other factors of vitamin B complex can be made on the basis of a diet history or a therapeutic test; full doses of a vitamin B complex concentrate can be given orally or parenterally for at least three weeks to determine the effect. Sevringhaus obtained fine results by giving nicotinic acid for three weeks, 50 mg. or more per day orally.

A burning sensation and eventual glossitis may follow the introduction of a new denture or denture cleanser or may be caused by the presence of a new filling with a different amalgam (and a resultant irritating electric current in the mouth). These points can be determined by a more extensive history and corrected by removal of the fault. An infectional cause can also best be excluded or identified by a dentist. Other local causes of a burning type of soreness are excessive smoking or a functional decrease in the amount of saliva.

If the symptoms are present without any of the aforementioned causes and if a trial of therapy fails, or if the "soreness" is purely a sensation, there may be a psychoneurotic cause. The patient's emotional status or history (not mentioned) may suggest this from the start. The type of disorder might be menopausal, situational or hysterical and could be best determined and treated by a neuropsychiatrist.

PREVENTION AND TREATMENT OF ERYTHROBLASTOSIS

To the Editor:—Can erythroblastosis fetalis be prevented? What is the best treatment of this condition?

M.D., Pennsylvania.

ANSWER.—Transfusion of Rh-positive blood to an Rh-negative woman may sensitize her. If she then becomes pregnant with an Rh-positive fetus the sensitization may become reinforced and the infant may have fetal erythroblastosis. Intramuscular injections of Rh-positive blood may have an effect similar to that from a transfusion especially if repeated injections are given. Sensitization by transfusion or injections may persist for many years. Therefore, girls or women must be tested for their Rh factor before transfusions or injections of blood and if found Rh-negative should receive Rh-negative blood. At the present time this is the only means of prevention of erythroblastosis. Carter (Rh Hapten: Its Preparation, Assay and Nature, *J. Immunol.* **61**:79-88 [Jan.] 1949) reported recently that injection of Rh hapten during pregnancy may prevent erythroblastosis. However, this claim must await corroboration.

Transfusion of Rh-negative blood has been found effective in the treatment of the erythroblastotic infant. Ten cubic centimeters of blood per pound of body weight is recommended. The transfusion has to be repeated one or more times, depending on the condition of the infant. Good results have been observed following transfusion of washed Rh-negative red cells suspended in 5 per cent dextrose solution. In some instances so-called exchange or replacement transfusion has been found useful. Small amounts of blood (from 20 to 30 cc.) are withdrawn from the infant and somewhat larger amounts of Rh-negative blood (of the same group as the infant's or of group O) are injected until about 420 cc. has been removed and 500 cc. injected. The umbilical vein is used most frequently. This route can be used for only about 10 hours after birth, as the vein closes soon after birth. The femoral vein also can be used and is not subject to time limitation. The longitudinal sinus and the radial artery have been recommended for removal of blood and any of the commonly used veins (temporal or cubital) for the injection. When one of these two routes is used, one does not have to alternate the withdrawal and injection of blood and both may proceed simultaneously. (Diamond, L. K.: Replacement Transfusion as a Treatment for Erythroblastosis Fetalis, *Pediatrics* **2**:520-524 [Nov.] 1948. Wallerstein, H.: Substitution Transfusion: A New Treatment for Severe Erythroblastosis Fetalis, *Am. J. Dis. Child.* **73**:19-33 [Jan.] 1947. Wiener, A. S., and Wexler, E. B.: Results of Therapy of Erythroblastosis with Exchange Transfusion, *Blood* **4**:1-35 [Jan.] 1949.)

Oxygen therapy is especially useful until the anemia has been corrected.

It has been claimed that erythroblastotic infants should not be nursed by their mothers. According to recent studies this restriction is not warranted, because there is no evidence that Rh antibodies can pass through the gastrointestinal mucosa of infants.

Transfusion therapy applies also to erythroblastosis due to A or B blood group incompatibility. Blood of group O should be used, and the Rh factor of the transfused blood should be the same as the infant's.

HABITUAL ABORTION

To the Editor:—A woman who wants a child has had three miscarriages in five years, each miscarriage occurring at two months. Her menses were always so painful that she had to go to bed for one day, but they were of normal length and quantity and free from clots. She is 5 feet 4 inches (163 cm.) tall and used to weigh 150 pounds (68 Kg.). The last five months she had taken ½ grain (33 mg.) thyroid daily and her weight has been reduced to 140 pounds (64 Kg.). She just had her third pregnancy and had received progesterone during what would have been her menstrual week. Her brother and one sister both have healthy children, and her family seems healthy and prolific. Her husband is a clerical worker, weighs about 200 pounds (91 Kg.) and seems healthy. Do you have any suggestions? Results of Kahn tests are negative for both husband and wife.

John A. Kittelson, M.D., Sioux Falls, S. D.

ANSWER.—This woman belongs in the class of women who abort habitually, and her trouble is not easy to correct. A thorough examination should be made of both husband and wife. Both patients should have one or more basal metabolism studies, and if the basal metabolic rates are low, thyroid extract should be prescribed. Both husband and wife appear to be overweight. Nothing is said about whether a curettement was performed after the abortions, but presumably it was not performed. Sometimes dilatation of the cervix and curettement is helpful.

Apparently this patient has no difficulty in conceiving. As soon as she misses a menstrual period, she should be advised to take 10 mg. of diethylstilbestrol every night. She should also be advised to stop all sexual intercourse, all travel in buses, autos or streetcars and to leave the house only when necessary. For the week during which the menses would have occurred were the patient not pregnant, she must remain off her feet except to go to the toilet. About two weeks after the missed menses a pregnandiol test should be made to determine whether there is a deficiency of progesterone. If there is a pregnandiol deficiency, 75 to 100 mg. of progesterone should be given hypodermically every day. This, however, is expensive. The diethylstilbestrol should be continued, but each week after the first four weeks the dose should be increased 5 mg. daily until 35 mg. a day is taken. This dose should be maintained until the end of the seventh month. The progesterone should be continued only as long as repeated frequent pregnandiol tests reveal the need for this therapy. At least 1 to 2 grains (65 to 130 mg.) thyroid extract daily should be given if the basal metabolic rate is low.

WATER SOFTENERS AND PRURITUS

To the Editor:—Information regarding water-softening processes as a cause of pruritus would be appreciated. If this is a recognized cause, is it an allergic manifestation?

M.D., Fla.

ANSWER.—The chemicals employed in water softening foremostly are determined by the volume of water to be softened. At the municipal level such substances as sodium carbonate and calcium oxide may be found. At the village level the zeolite processes may be utilized, the chief chemical being hydrated sodium aluminum silicate. At a slightly lower level, water softening may be brought about through the action of various phosphates—among others the sodium pyrophosphate. At the laboratory level exchange resins may be utilized to produce water of almost distillation purity. In any situation, pruritus is most likely to arise when the active agent is an alkali. The alkali acting on the skin tends to destroy the normal acid mantle. "Winter itch," a highly common skin disturbance, arises from a similar cause. Harsh soaps yielding considerable alkali on hydrolysis deprive the skin of its normal acid state. It is more common during winter months, since during that period the outpouring of perspiration acid is at a low level. Usually the pruritus that may arise from alkali water softeners is not associated with allergy but, instead, represents an early stage of dermatitis. In fact, frank dermatitis from contact with water-softening agents may arise.

TETANUS IMMUNITY

To the Editor:—In reference to the query on "Tetanus Immunity" in The Journal (page 758, June 25, 1949), the following comments appear to be urgently indicated. Tetanus, as it occurs in human beings, is not an immunizing disease. The evidence for this statement is immunologic and clinical. With respect to the former, titration of specimens of blood obtained from patients at variable intervals after the injection of graded quantities of tetanus antitoxin reveals a gradual, but ultimately complete, disappearance of specific antibodies from the circulation. This situation prevails in both normal persons and persons who have experienced clinical tetanus. Other conditions being equal, the rate of elimination is governed by the amount introduced (Madsen, T.: The Decrease of Antibodies in the Organism Indicated by a Formula, in Festskrift ved indvielsen af Statens Serum Institute, Copenhagen, O. C. Olsen & Co., 1902, no. 8). In general, the following rule is a reasonably accurate guide: 1,500 American units (an American unit is twice the International unit) confer titrable immunity for two to three weeks, 10,000 units for six to ten weeks and 100,000 units for eight to eleven weeks or sometimes longer (Cooke, J. V., and Jones, F. G.: Duration of Passive Tetanus Immunity and Its Effect on Active Immunization with Tetanus Toxoid, *J. A. M. A.* **121**:1201 [April 10] 1943). In respect to higher doses, such as the 500,000 units described in the query, the serial titers of a patient who received 1,254,000 International units (627,000 American units) over a period of eleven days (almost all by the intramuscular and subcutaneous routes) have been reported (Sohier, R., and Jude, A.: *Bull. et mém. Soc. méd. d. hop. de Paris* **54**:80, 1938). The titers were as follows: 30 to 50 units per cubic centimeter on the sixth day after the termination of specific serotherapy, 3 to 30 units on the fifteenth to the thirty-ninth day and between 0.01 and 0.03 unit on the eighty-sixth to the one hundred and sixth day. The clinical information consists of authenticated reports of multiple attacks of tetanus in the same person (Behring, E.: *Schmidt's Jahrb.* **340**:1, 1915. Sick, cited by Brandt, H.: *Zentralbl. f. inn. Med.* **36**:565, 1915). During the later attacks there has been no consistent tendency toward modification of the disease, and a fatal outcome may occur (Westwater, A. M.: *Brit. M. J.* **1**:395, 1917). Single or multiple attacks of tetanus supply neither basic nor humoral immunity. Consequently, patients who have survived one or more attacks of the disease require the same artificial antigenic stimulus (tetanus toxoid) as do those who have not had tetanus. The superiority of the artificial over the natural antigenic stimulus is purely a matter of dosage. In the natural disease, one minimal lethal dose (M. L. D.) is fatal. When tetanus toxin is converted into toxoid, multiples of a lethal dose may be injected without causing clinical tetanus.

Tetanus toxoid must be injected at an appropriate interval after antitetanic serum. The duration of titrable immunity after variable amounts of tetanus antitoxin has already been described. In this respect, it is pertinent that the disappearance of the inhibiting effect of passively received antitoxin (antitetanic serum) is more important in the early development of active immunity than the time at which the injection of tetanus toxoid is started (Cooke and Jones, see previous reference). Consequently, the time of administration of tetanus toxoid (preferably three injections of refined alum-precipitated toxoid at intervals of two to four weeks) is to be governed in terms of the amount of antitoxin originally injected. Obviously, this applies also to the follow-up active immunization of a patient who has received a prophylactic dose of tetanus antitoxin following an injury considered likely to lead to the appearance of the disease. In this respect, it is pertinent that the general trend is in the direction of employment of prophylactic doses of 5,000 to 10,000 American units instead of 1,500 units. Moreover, it may be restated that the first dose of tetanus toxoid should be administered about six weeks after 10,000 American units of tetanus antitoxin.

Concerning the large dose of antitoxin described by the writer of the query, it is significant that doubt prevails concerning the therapeutic value of antitetanic serum. In fact, the administration of antitetanic serum to a patient acutely ill with tetanus is fraught with danger. During the period of accelerated or delayed serum sickness, reactivation of convulsions may occasion sudden death. Moreover, statistical evidence of a convincing nature is lacking to validate the routine employment of tetanus antitoxin as a therapeutic agent. The use of antitetanic serum continues to be of cardinal importance for the prophylaxis of tetanus. When used, adequate amounts (5,000 to 10,000 units or more on certain occasions) are mandatory. Moreover, follow-up active immunization with tetanus toxoid is obligatory, in order to spare the patient the possible dangers of acute, subacute (accelerated) or delayed serum sickness. It is to be emphasized that criticism of the therapeutic value of antitetanic serum in no way means that antitetanic serum should be ignored in the prophylaxis of this disease.

Critical evaluation of the various dosage schedules employed in the serotherapy of tetanus indicates that amounts of 40,000 to 60,000 units, administered as one dose (intramuscular or intravenous) are associated with mortality rates no higher than those following the employment of the larger quantities (Spaeth, R.: Serum Therapy of Tetanus, *Am. J. Dis. Child.* **61**:1146 [June] 1941).

Immunologic and clinical data are lacking to indicate that foreign protein reactions, related to the injection of tetanus toxoid (which contains no horse serum) into a patient previously inoculated with tetanus antitoxin, do or should occur. Acceptance of such a point of view would invalidate the basic concept of the specificity of allergic phenomena.

Ralph Spaeth, M.D., Chicago.

The Journal of the
American Medical Association

Published Under the Auspices of the Board of Trustees

Vol. 141, No. 4 Chicago, Illinois September 24, 1949

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BETA RAY BURNS OF HUMAN SKIN

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The development of the atomic energy program has resulted in a large increase in the number of persons exposed to radiologic hazards. With this increase it is essential that physicians and other scientists be acquainted with the dangers accompanying the handling of radioactive materials. Four cases of beta ray burns of the hands are reported here for the purpose of supplementing the present information in the existing literature,[1] and emphasizing the early clinical course, as well as the laboratory observations in such cases. It is hoped that, by calling attention to the early signs and symptoms of injury by beta radiation, overexposure will be recognized and hazardous operations discontinued before more damage is incurred.

All 4 men were injured while undertaking procedures of a like nature at the recent atomic tests at Eniwetok Atoll (United States Atomic Energy Commission's proving grounds). This work involved the handling of radioactive materials which emitted large amounts of beta and gamma radiation. A deviation in the prescribed procedure undertaken to expedite the operation resulted in the handling of these radioactive substances directly with rubber-gloved and sometimes with bare hands rather than with the remote handling devices that had been provided. Measurement of the dosage of beta rays received by the patients was not obtained at the time of exposure, but film badge and pocket ionization chambers worn by the men over the thoracic region showed readings for gamma rays varying from 1 to about 15 r. In view of the fact that the hands were much closer to the active material, it must be presumed that the amount of gamma radiation received by the hands was somewhat larger, probably by a factor of 10.

The major portion of the radiation consisted of beta rays with an average maximum energy of about 1 Mev. (million electron-volts). The ratio of beta counts to gamma counts in a glass-walled Geiger-Mueller type tube was about 6 to 1. The physical properties of beta rays of 1 Mev. maximum energy are such that approximately 90 per cent of the incident rays are absorbed by the first 3 mm. of tissue and 99 per cent are absorbed in 6 mm. of tissue.[2] Estimates of dosage indicated that these 4 men received from 3,000 to 16,000 rep (roentgen equivalent physical) to the outer surface of the skin.[3] The beta ray dosages below the surface of the skin would then be 300 to 1,600 rep at 3 mm. and 30 to 160 rep at a depth of 6 mm. In view of the fact that there was definite evidence that the whole body exposure did not exceed 15 r of gamma rays in any case, it was believed that there was minimal, if any, danger of important whole body effect, and the patients were treated primarily for local beta ray burns of the hands. This assumption was borne out in the course of the disease, in that at no time was there any significant evidence of other than local damage.

Since the amounts of radiation received and the clinical courses of the patients differ to some extent, each case is reported separately. Following is a brief synopsis of the clinical course of each patient. Prior to this episode these men had worked with radioactive materials but had had no overexposure to radiation and were all in good health.

REPORT OF CASES

Case 1.—A white man aged 26 received 10 r of gamma rays to his whole body and about 5,000 to 10,000 rep of beta rays to his hands over a period of about sixty minutes. At the time of exposure he noted a tingling and itching of his palms, which he assumed to be due to excessive perspiration. Approximately two hours later he noted a stiffness of the fingers and a slight swelling of the hands. He reported to a physician thirty-four hours after exposure.[4] At this time there was slight swelling, erythema and tenderness of the second and third fingers of the right hand. On the left hand the volar aspect of all digits and the distal portion of the palm showed mild erythema and swelling. There was a blanched area over the proximal phalanx of the second finger of the left hand.

During the next twenty-four hours there was a definite decrease in the erythema and swelling of both hands. Beginning vesiculation was noted in the blanched area of the index finger of the left hand, and three days after exposure a definite vesicle with a surrounding area of erythema had formed.

On the fourth day the center of this vesicle was blackish blue. There was erythema of the volar surface of the second, third and fourth fingers of the left hand and slight swelling

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This document is based on work performed under contract 7405-eng-36 for the Atomic Energy Commission.

From the Los Alamos Scientific Laboratory (Drs. Knowlton, Leifer, Hogness and Hempelman) and the Los Alamos Hospital (Drs. Blaney, Gill, Oakes and Shafer).

[1] (*a*) Robbins, L. L.; Aub, J. C.; Cope, O.; Cogan, D. G.; Langohr, J. L.; Cloud, R. W., and Merrill, O. E.: Superficial Burns of Skin and Eyes from Scattered Cathode Rays, Radiology **46:** 1-23 (Jan.) 1946. (*b*) Raper, J. R.: Plutonium Project: Effects of Total Surface Beta Irradiation, ibid. **49:** 314-324 (Sept.) 1947. Low-Beer, B. V. A.: External Therapeutic Use of Radioactive *Phosphorus:* I. Erythema Studies, ibid. **47:** 213-222 (Sept.) 1946. Wilhelmy, E.: Ueber die Reaktion der Haut auf langwierige Röntgenstrahlen und Kathodenstrahlen, Strahlentherapie **55:** 498-523, 1936.

[2] Lapp, R. E., and Andrews, H. L.: Nuclear Radiation Physics, New York, Prentice-Hall, Inc., 1948, p. 178.

[3] Joseph G. Hoffman of the Roswell Park Memorial Hospital, Buffalo, made the dosage calculations.

[4] In cases 1, 2 and 3 the patients left Eniwetok immediately after exposure and were flown directly to Los Alamos, where they were seen by physicians on arrival. In case 4 the patient was not known to have been injured until the development of symptoms.

without erythema of the index finger and thumb of the right hand.

On the seventh day there were blanched and tender areas along the thenar aspect of the index finger and on the pad of the distal phalanx of the thumb of the right hand. By the eighth day these areas had become vesicular. From the eighth to the twenty-fifth day there was a continuous extension of the erythema of both hands, with vesicles forming two to three days after the onset of the reddening (figs. 1 and 2). By the twenty-fifth day, the erythema had disappeared and bulla formation had reached its maximum. At this time there was one large confluent bulla covering all four fingers and the distal portion of the palm of the left hand; a comparable bulla covered the right hand, including the fingers and palm.

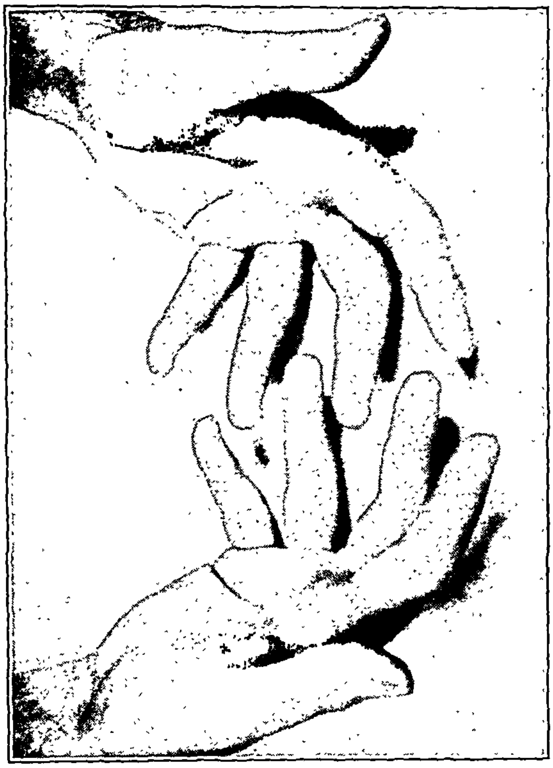

Fig. 1 (case 1).—Eleven days after exposure early vesicles were visible on the second fingers of both hands. (This photograph and those in subsequent figures were prepared by Elmer Donor of the Los Alamos Scientific Laboratory.)

Since the twenty-fifth day after exposure the clinical course has been one of constant slow improvement. By the twenty-eighth day drying of the bullae of both hands was noticeable, and on the thirty-second day most of these areas were dry.

On the thirty-ninth day the hands were surgically débrided with the patient under general anesthesia. At this time there was epithelization of both hands except in one area over the proximal phalanx of the second finger of the left hand, which appeared white and necrotic, and other smaller areas over the second, third and fourth fingers of both hands.

A second débridement was done on the fifty-third day, and at this time the only unepithelized areas present were over the second and third fingers of the left hand and a small area over the proximal phalanx of the second finger of the right hand. Further surgical débridements were carried out on the sixty-seventh and eighty-second days (fig. 3). Unhealed areas remained on the second and third fingers of the left hand and on the proximal phalanx of the second finger of the right hand.

Five months after exposure these lesions were still unhealed (fig. 4). The dimensions of all three lesions were about 1 by 2 cm., and there were white necrotic granulations in the center of each which bled easily on slightest trauma. The areas were surrounded by invaginating folds of thin, pink epithelium. There was minimal healing during the third, fourth and fifth months of the disease. Skin grafting of these lesions was performed during the seventh month with good results.[5] Skin grafting has also been carried out in an effort to replace the decidedly atrophic epithelium present in other injured areas, and further operative measures of this nature are anticipated. At the end of one year severe atrophy of the soft tissues underlying the sites of injury remains. There is moderate ankylosis of the phalangeal joints of the three most severely involved fingers.

Case 2.—A white man aged 27 received about 15 r of gamma rays to his thoracic region and an estimated 8,000 to 16,000 rep of beta rays to his hands over a sixty minute period. During this exposure he experienced a sensation of itchiness in both hands. Four hours later he noted a swelling of his left hand. He reported to physicians thirty-four hours after exposure, and at this time all the digits of the left hand were swollen and erythematous, the second and third fingers being most severely involved. There were no blanched areas on the left hand, and the right hand appeared perfectly normal.

During the third and fourth days, there was a definite decrease in erythema of the left hand and there were no symptoms referable to the right. From the seventh to the eleventh day erythema and tenderness developed over all four fingers and the distal portion of the palm of the left hand, and on the eleventh day tenderness and erythema was noted on the right index finger.

On the twelfth day vesicles began to develop in the erythematous areas. Up to the twenty-eighth day there was spreading of the erythema, with bullae eventually forming in all such areas. By the twenty-eighth day the bullae covered the volar surfaces of all the fingers and the distal portions of the palms of both hands.

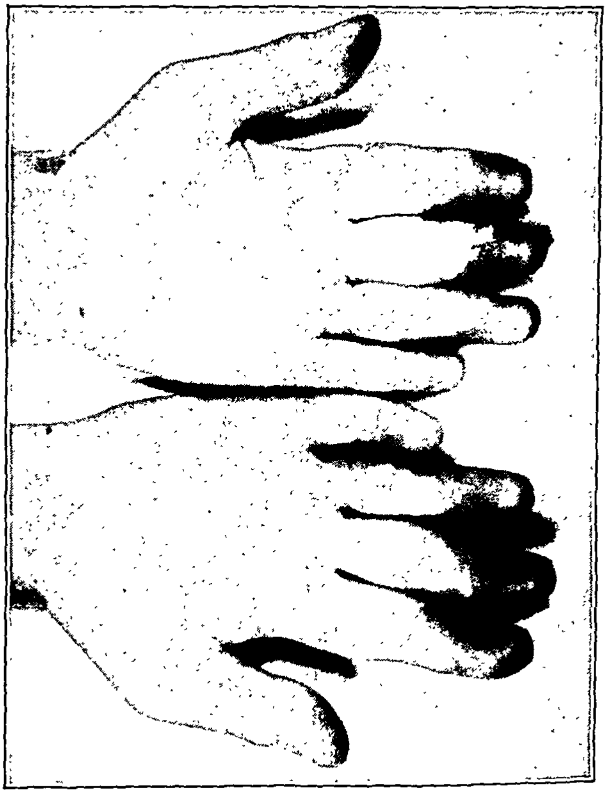

Fig. 2 (case 1).—Eighteen days after exposure there were large, tense, confluent bullae which followed the secondary erythema.

At about this time the erythema subsided. The bullae dried up by the thirty-fifth day (fig. 5), and part of the dead epidermis sloughed spontaneously. Surgical débridement on the thirty-ninth day disclosed a layer of thin epithelium covering most of the burned areas (fig. 6). When a second débridement was performed, on the fifty-third day, a small unhealed area remained on the second finger of the right hand and on the second and third fingers of the left hand. On the sixty-seventh day a third débridement was performed, and at this time both hands were entirely epithelized. The new epithelium was thin and had a tight, shiny appearance, as can be seen from figure 7.

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[5] The plastic surgery was performed on this patient and other patients by Dr. J. Barrett Brown of Barnes Hospital, St. Louis.

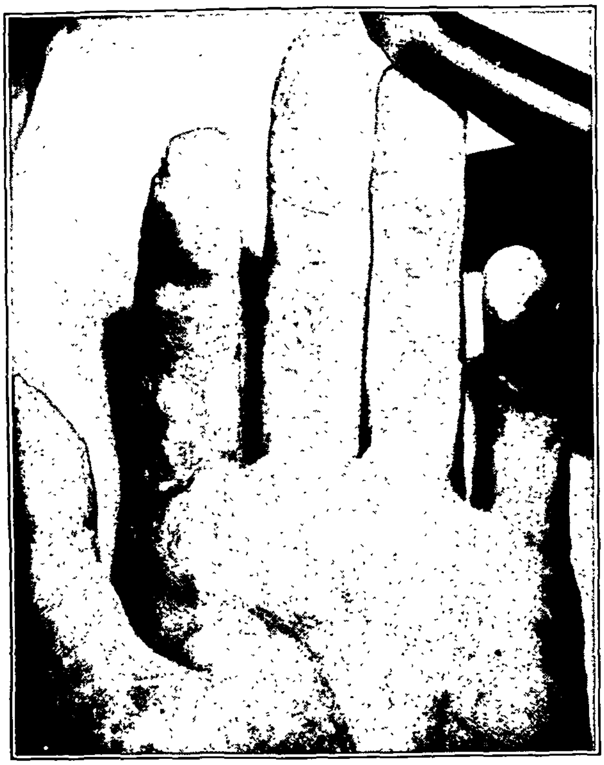

Fig. 3 (case 1).—Eighty-two days after exposure there was an ulcer over the first phalanx of the second finger with a covering of slightly vascular, fibrotic granulation tissue. Superficial desquamation was also evident over the other fingers and palm.

Five months after exposure, there was a secondary breakdown of the epidermis over the most heavily exposed areas with cracking and drainage of serous fluid. Skin grafting of the palmar surfaces of both second fingers was performed during the sixth month with good results. By the twelfth month skin had been grafted onto the volar aspects of all fingers and the distal half of the palm of the left hand to replace injured, atrophic epithelium. By this time there was some loss of mobility of the digits of the left hand (despite efforts of active and passive manipulation during the course of disease) and considerable loss of underlying soft tissue.

CASE 3.—A white man aged 26 received 4.5 r of gamma rays to his whole body and about 5,000 to 10,000 rep of beta rays to the left hand in about a forty minute period. He first noted symptoms of swelling and stiffening of his left hand about six hours later. When he was examined forty hours after exposure there was a mild erythema and edema of the left hand. The right hand was free of signs and symptoms and remained so during the entire course of the disease. The generalized erythema and edema of the left hand decreased up to about the third day, at which time a secondary erythema appeared over the volar aspect of the index finger.

On the fourth day there were circumscribed dark red areas over the volar aspect of each phalanx of the index finger and the middle and distal phalanges of the third finger. From the seventh to the fourteenth day these five areas acquired a dark bluish color and became vesicular in character. By the fifteenth day these vesicles began to coalesce, and a new vesicle appeared on the proximal phalanx of the third finger. At this time the fourth and fifth fingers had become erythematous. On the seventeenth day erythema was noted over the distal heads of the second and third metacarpals. By the twenty-eighth day a confluent bulla including all four fingers and the heads of the second and third metacarpals was present. The entire reaction reached a maximum on the thirty-second day, at which time all erythematous areas, including one on the lateral margin of the distal phalanx of the thumb, had become bullous. On the thirty-fifth day the bullae had begun to dry and desquamate.

Surgical débridement was performed on the thirty-ninth, fifty-third and sixty-seventh days (fig. 8) with the patient under general anesthesia, and at each operation further healing was observed. On the sixty-seventh day whitish necrotic areas over the second and third fingers corresponding to the location of the initial bluish vesicles seen on the fourth day remained.

One hundred and sixteen days after exposure tendons were visible in both of the ulcerated areas (fig. 9). The tendon visible in the lesion on the second finger appeared to be partially necrotic. There was little, if any, healing of the lesions during the third and fourth months of the disease. By the fifth month there was definite improvement of the lesions (fig. 10), but from a functional point of view the second and third fingers of the left hand showed only slight joint mobility. During the next seven months skin was grafted first over the unhealed areas on the second and third fingers and later over the volar aspects of the remaining fingers of the injured hand to provide a more functional epithelium. Despite efforts of active and passive manipulation throughout the course of the disease, the phalangeal joints of the index finger are immobile and there is moderate limitation of flexion of the third finger. The soft tissue of both of these fingers is decidedly atrophic.

CASE 4.—A white man aged 27 received about 1 r of gamma rays to his whole body and an estimated 3,000 to 4,000 rep of beta rays to his left hand in about a sixty minute period. This patient's exposure occurred approximately two weeks prior to that of the other 3 men. He had no symptoms until eleven days after exposure, at which time he noted redness and swelling of the skin over the volar aspect of the proximal phalanges of the second, third and fourth fingers of the left hand. The patient reported to a physician on the thirteenth day, at which time there was a bluish discoloration beneath the skin in the

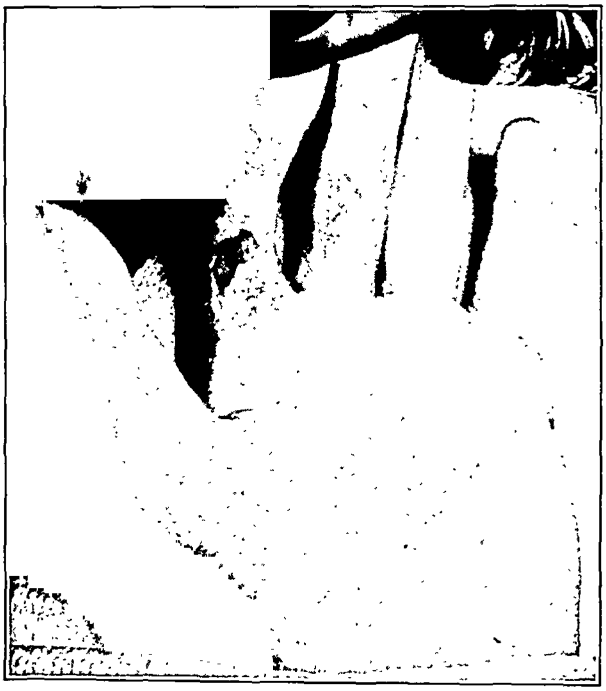

Fig. 4 (case 1).—One hundred and fifty-eight days after exposure there was still an unhealed ulcerated area over the first phalanx of the second finger with atrophy and flexor contraction of the digit.

aforementioned areas but no vesicle formation. This was not recognized as a radiation injury at this time, because the patient gave a history of carrying an exceedingly heavy lead container with his left hand by means of an iron cross bar. Mechanical injury was thought to be the etiologic factor. By the fifteenth day, however, vesicles had developed in all of the erythematous areas and it became apparent from the course that this was a radiation injury. The erythema had spread to the middle phalanges of the second and third fingers, and there was a bluish discoloration over the head of the second metacarpal. On the nineteenth day vesicles had formed over the middle phalanges of the second and third fingers.

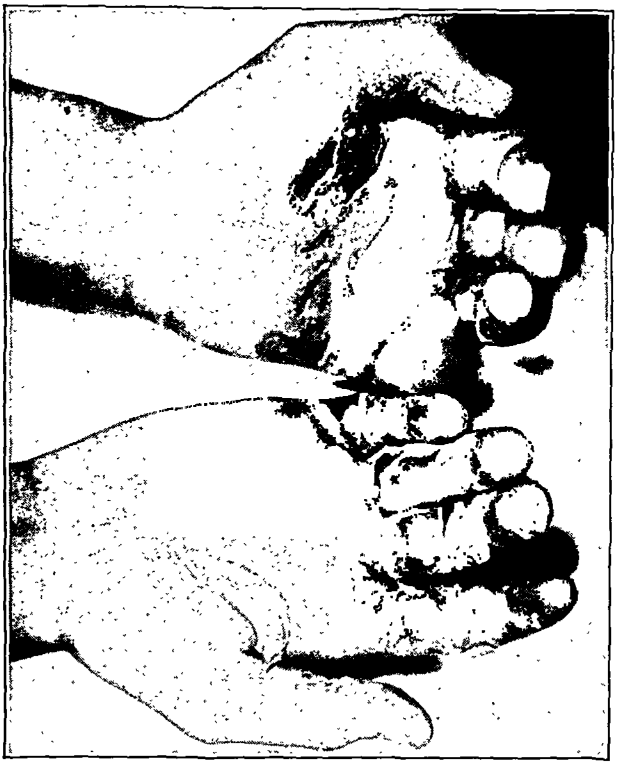

Fig. 5 (case 2).—Thirty-five days after exposure there was much spontaneous desquamation over the burned areas with a tanned appearance of the proximal portions of the palms.

By the twenty-fifth day the process had ceased to advance and bullae covered the volar surfaces of all the fingers and the head of the second metacarpal. From this time on drying progressed rapidly, and by the thirty-second day the bullae were completely dry. There was desquamation of the burned surfaces by the forty-seventh day, with epithelization over all these areas. This patient has had *no signs* of residual damage or tissue breakdown over a period of one year except for a slight reddening of the palmar surface of the hand. There were no signs or symptoms referable to the right hand during the course of the disease.

GENERAL CLINICAL OBSERVATIONS

The clinical course of these 4 patients may be divided into four distinct phases, comparable to those described by Robbins and others [1a] and corresponding to the time intervals described by Borak [6] for effects of roentgen rays. Phase 1 consists of the initial erythema and edema with blanching of areas which received the greatest amounts of exposure. This phase begins with the initial exposure, reaches a peak in about forty-eight hours and then subsides rapidly. There follows a period of relative absence of signs and symptoms for three to five days (phase 2: third day to sixth or eighth day), at the end of which time phase 3 begins. This phase is first manifested by the development of a secondary erythema which in some cases is complicated by extravasation of blood into the erythematous areas. These reddened areas become vesicular eight to twelve days after exposure. There follows a period of about two weeks during which the erythema spreads and vesicles and bullae are formed. At the end of this time (twenty-four to thirty-two days after exposure) the active disease process becomes arrested and the bullae begin to dry and desquamate. During the last part of phase 3 epithelization occurs over all areas where the vascular supply has not been seriously damaged. Phase 4 is the chronic stage of the disease. Those areas of skin in which there has been serious interference with the vascular supply remain unhealed. In these cases skin grafting was undertaken when it became evident that epithelization would be incomplete. *An atrophic epidermis, which is probably permanent* in nature and in which secondary epithelial structures (such as hair and sebaceous glands) are absent, is present in the less seriously damaged areas. Secondary ulcerations such as were present in these cases, as well as the hyperkeratoses, telangiectases and malignant degenerations [7] which may occur many years after exposure, are included in phase 4.

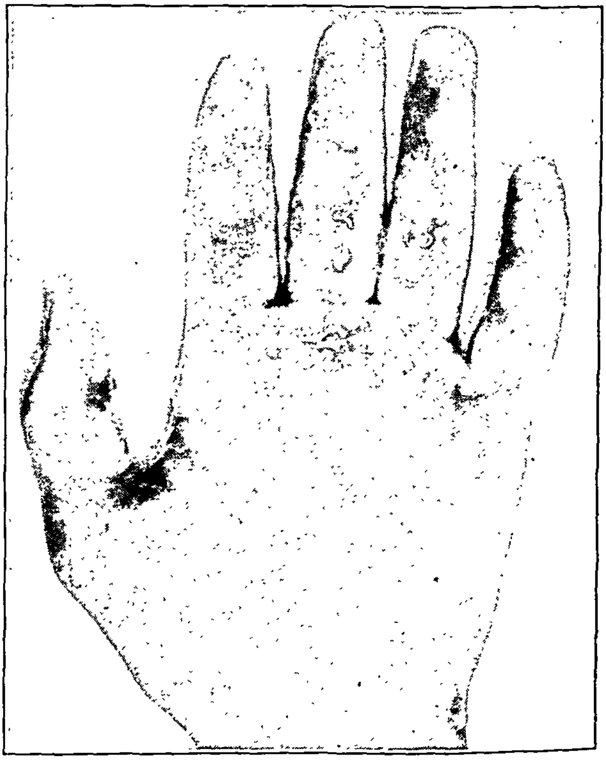

Fig. 6 (case 2).—Thirty-nine days after exposure exceedingly thin epithelium was found beneath the thick, dead skin which had been removed surgically. These areas were extremely pain sensitive.

The two men who probably received the largest amounts of radiation apparently noted a sensation of tingling and itching of the hands at the time of exposure. This suggests that intense beta radiation produces a sensory perception.

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[6] Borak, J.: Radiation Effects on Blood Vessels: (*a*) Erythema; Edema, Radiology **38**: 481-492 (April) 1942; (*b*) Inflammation; Degeneration; Suppression of Growth Capacity; Retrogression; Necrosis, ibid. **38**: 607-617 (May) 1942; (*c*) Telangiectasis; Effects on Lymph Vessels; ibid. **38**: 718-727 (June) 1942.

[7] Henshaw, P. S.; Snider, R. S., and Riley, E. F.: Aberrant Tissue Development in Rats Exposed to Beta Rays: The Late Effects of P^{32} Beta Rays, Radiology **52**: 401-415 (March) 1949.

The initial erythema and edema seen in these patients in the first forty-eight hours may be due to a local release of histamine in the skin with a resulting dilatation and increased permeability of the superficial capillaries.[6] In the more heavily exposed areas there was a definite blanching, which may have been caused by direct damage to the capillaries, resulting in a vasoconstriction phenomenon or to thromboses with occlusion of the vessels. The secondary erythema which occurred after five to seven days may have been a vascular reaction to cells which were continuing to die over a period of several weeks. It has long been recognized that many cells which have been injured by radiation can survive for a considerable period of time, but when they attempt to divide at a later date are unable to do so and die.[8]

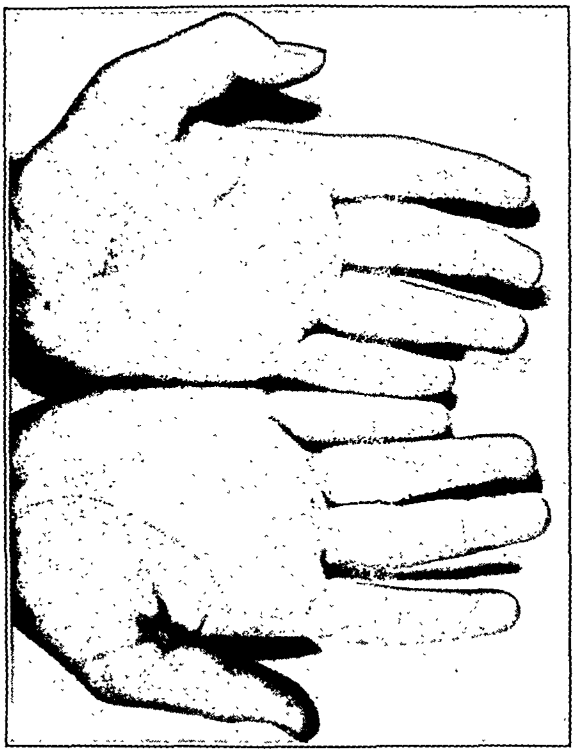

Fig. 7 (case 2).—Eighty-two days after exposure there had been complete epithelization of both hands, but the shiny, atrophic epidermis was evident especially over both index fingers. A secondary breakdown occurred in these areas at about the one hundred and sixtieth day.

The bluish discoloration of some of the erythematous areas was the result of extravasation of blood from the injured dermal plexus of capillaries. In the early stage these lesions appear indistinguishable from ordinary "blood blisters" and bruises. These hemorrhagic areas in all cases showed poor healing and in some cases nonhealing, probably as a result of the severe damage to the capillaries which must, in the process of repair, nourish the healing epidermis.

All areas of the skin which were involved in the secondary erythematous process developed vesicles. These were usually initially discrete and subsequently coalesced with the formation of large bullae, which in some cases were continuous over all five digits and most of the palm. The bullae were tense and frequently caused sufficient pain, despite generous sedation of the patient, to justify repeated drainage. Aerobic and anaerobic cultures of the vesicle fluid were negative except on one occasion, in 1 case, in which Staphylococcus albus was found, presumably a contaminant. Thus, the course was not complicated by secondary infection. The development of a cellulitis resistant to chemotherapy would have been seriously detrimental to the injured tissue. The vesicles began to dry at the end of phase 3 and were either spontaneously desquamated or removed by surgical débridement.

The new epithelium which was formed over the involved areas was in general thin and shiny, except in case 4, in which there appears to be complete healing. A blotchiness of the underlying vascular tissue, which probably represents minor vascular damage, was noted in this case.

The effects on certain secondary skin structures in these patients were definite. Nail growth was retarded in all cases to about one half the normal rate (we served as controls), and there was a slight transverse depression in the nail which was formed at the time of exposure. There was a definite loss of hair from the backs of the fingers in case 2, but this was not noted in the other 3 cases. The dorsal surfaces of the fingers in cases 1, 2 and 3 showed an apparently permanent increase in pigmentation. During the first few days after exposure, there was an excessive amount of sweating of the palms, but after about a week there was a noticeable lack of perspiration which persisted for many weeks.

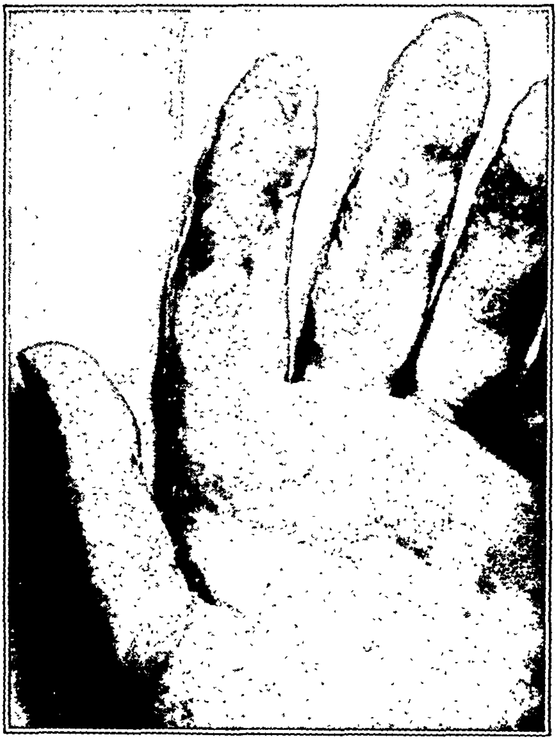

Fig. 8 (case 3).—Sixty-seven days after exposure there were deep ulcers similar to that in figure 3 and superficial desquamation of the palmar and digital surfaces.

There were definite changes in the capillary loops of the nail beds.[9] In the first five days an abnormal amount of dilatation and constriction of the loops was apparent. An increased tortuosity and in some capilaforementioned areas but no vesicle formation. This was not recognized as a radiation injury at this time, because the patient gave a history of carrying an exceedingly heavy lead container with his left hand by means of an iron cross bar. Mechanical injury was thought to be the etiologic factor. By the fifteenth day, however, vesicles had developed in all of the erythematous areas and it became apparent from the course that this was a radiation injury. The erythema had spread to the middle phalanges of the second and third fingers, and there was a bluish discoloration over the head of the second metacarpal. On the nineteenth day vesicles had formed over the middle phalanges of the second and third fingers.

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[8] Lasnitzki, I.: Effect of X-Rays on Cells Cultivated In Vitro: Recovery Factor, Brit. J. Radiol. 16: 61-67 (Feb.) 1943; Response of Cells In Vitro to Variations in X-Ray Dosage, ibid. 16: 137-141 (May) 1943.

[9] Todd, J. C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods, Philadelphia, W. B. Saunders Company, 1943, pp. 653-654.

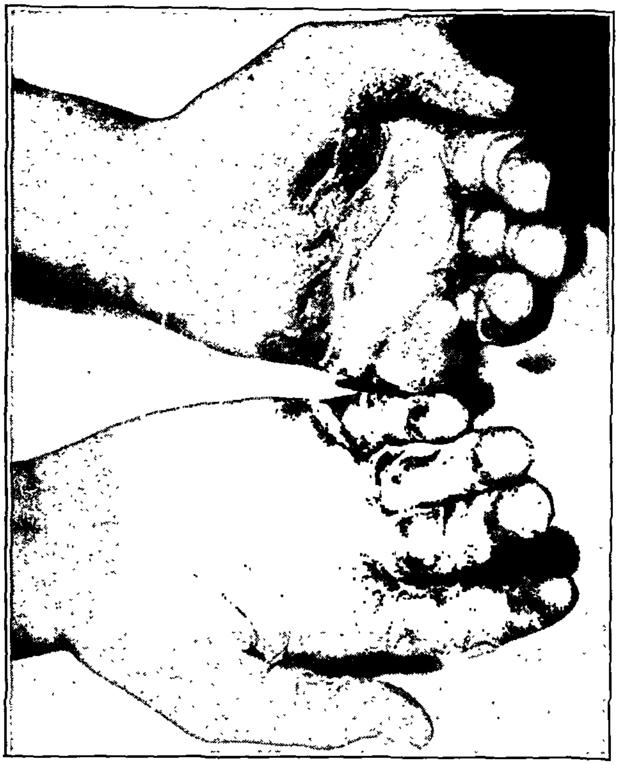

Fig. 5 (case 2).—Thirty-five days after exposure there was much spontaneous desquamation over the burned areas with a tanned appearance of the proximal portions of the palms.

By the twenty-fifth day the process had ceased to advance and bullae covered the volar surfaces of all the fingers and the head of the second metacarpal. From this time on drying progressed rapidly, and by the thirty-second day the bullae were completely dry. There was desquamation of the burned surfaces by the forty-seventh day, with epithelization over all these areas. This patient has had no signs of residual damage or tissue breakdown over a period of one year except for a slight reddening of the palmar surface of the hand. There were no signs or symptoms referable to the right hand during the course of the disease.

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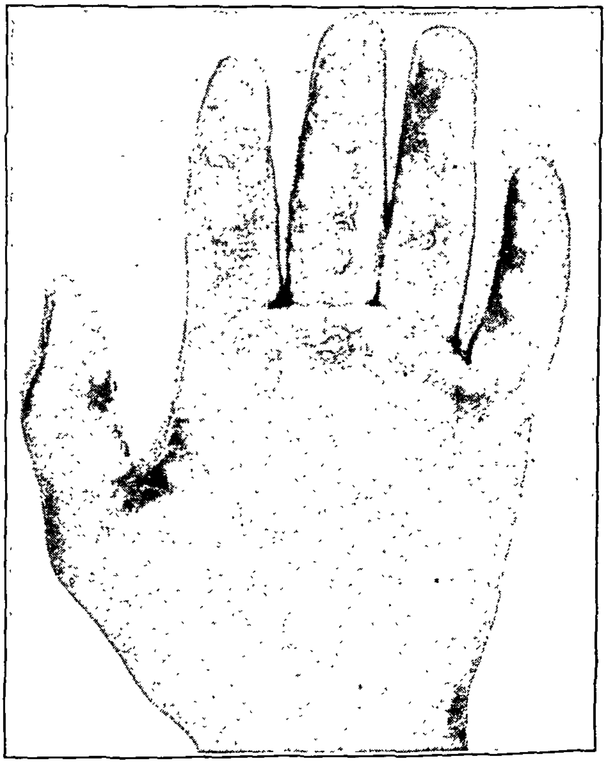

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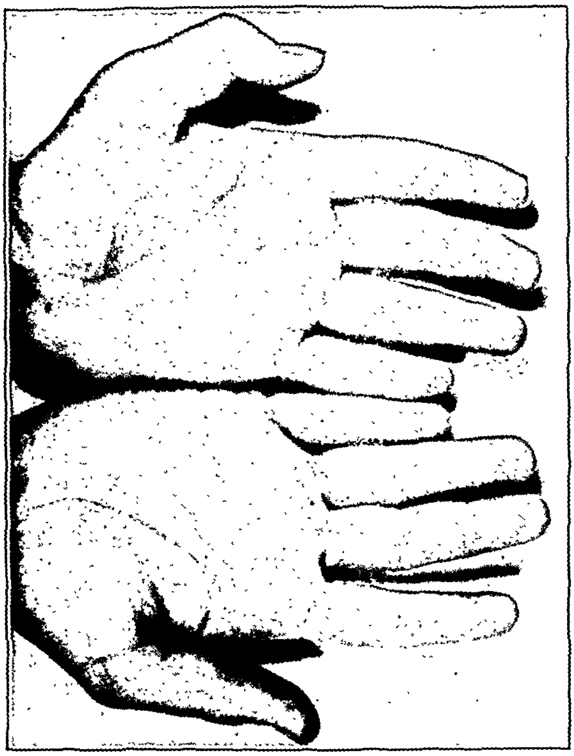

Fig. 7 (case 2).—Eighty-two days after exposure there had been complete epithelization of both hands, but the shiny, atrophic epidermis was evident especially over both index fingers. A secondary breakdown occurred in these areas at about the one hundred and sixtieth day.

The bluish discoloration of some of the erythematous areas was the result of extravasation of blood from the injured dermal plexus of capillaries. In the early stage these lesions appear indistinguishable from ordinary "blood blisters" and bruises. These hemorrhagic areas in all cases showed poor healing and in some cases nonhealing, probably as a result of the severe damage to the capillaries which must, in the process of repair, nourish the healing epidermis.

All areas of the skin which were involved in the secondary erythematous process developed vesicles. These were usually initially discrete and subsequently coalesced with the formation of large bullae, which in some cases were continuous over all five digits and most of the palm. The bullae were tense and frequently caused sufficient pain, despite generous sedation of the patient, to justify repeated drainage. Aerobic and anaerobic cultures of the vesicle fluid were negative except on one occasion, in 1 case, in which Staphylococcus albus was found, presumably a contaminant. Thus, the course was not complicated by secondary infection. The development of a cellulitis resistant to chemotherapy would have been seriously detrimental to the injured tissue. The vesicles began to dry at the end of phase 3 and were either spontaneously desquamated or removed by surgical débridement.

The new epithelium which was formed over the involved areas was in general thin and shiny, except in case 4, in which there appears to be complete healing. A blotchiness of the underlying vascular tissue, which probably represents minor vascular damage, was noted in this case.

The effects on certain secondary skin structures in these patients were definite. Nail growth was retarded in all cases to about one half the normal rate (we served as controls), and there was a slight transverse depression in the nail which was formed at the time of exposure. There was a definite loss of hair from the backs of the fingers in case 2, but this was not noted in the other 3 cases. The dorsal surfaces of the fingers in cases 1, 2 and 3 showed an apparently permanent increase in pigmentation. During the first few days after exposure, there was an excessive amount of sweating of the palms, but after about a week there was a noticeable lack of perspiration which persisted for many weeks.

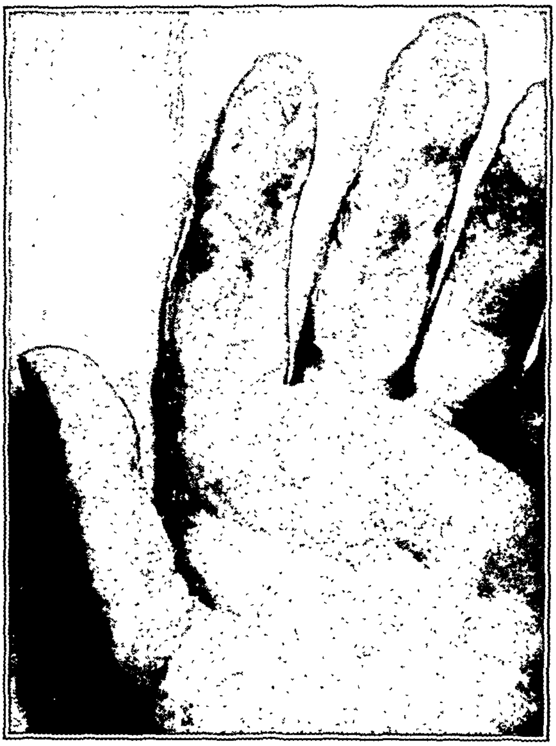

Fig. 8 (case 3).—Sixty-seven days after exposure there were deep ulcers similar to that in figure 3 and superficial desquamation of the palmar and digital surfaces.

There were definite changes in the capillary loops of the nail beds.[9] In the first five days an abnormal amount of dilatation and constriction of the loops was apparent. An increased tortuosity and in some capillaries actual thrombosis with interruption of blood flow was observed. By ten to fifteen days there was a definite decrease in the number of capillary loops, and during the third and fourth weeks some of the remaining loops had formed collateral loops into the area of destroyed capillaries. At the end of four months, a decreased number of capillaries remained and the collateral loops were apparent and functioning.

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[8] Lasnitzki, I.: Effect of X-Rays on Cells Cultivated In Vitro: Recovery Factor, Brit. J. Radiol. **16**: 61-67 (Feb.) 1943; Response of Cells In Vitro to Variations in X-Ray Dosage, ibid. **16**: 137-141 (May) 1943.

[9] Todd, J. C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods, Philadelphia, W. B. Saunders Company, 1943, pp. 653-654.

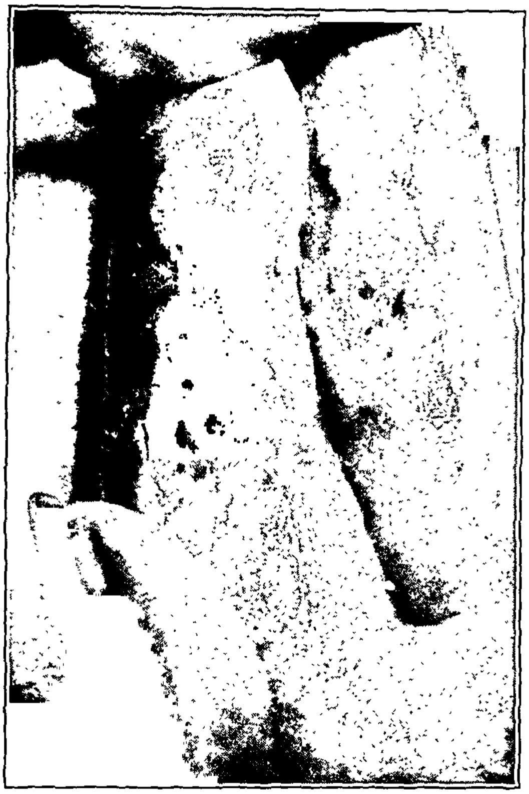

Fig. 9 (case 3).—One hundred and sixteen days after exposure a close-up view showed the extent of the ulcers during the fourth month. Small hemorrhages could be seen in the fibrotic granulation tissue, and a shiny tendon surface was present in the lesion over the first phalangeal joint of the index finger.

The erythema and vascular lesions were confined, for the most part, to the volar surfaces of the hands. The dorsal surfaces exhibited minor desquamation indicating significant irradiation of these areas, but there was a sharp line of delineation between the volar and dorsal surfaces. Another important feature of this series was the lack of damage to the right hands in cases 3 and 4 and the lesser reaction seen in right hands in cases 1 and 2. This can be explained by the nature of the operation, which involved more contact of the radioactive material with the left hand.

Although the temperature, pulse and respiration charts are not shown, there were slight elevations of temperature and pulse corresponding in time to the development of vesicles and bullae. The respiratory rate and blood pressure remained in the normal range throughout the illness.

LABORATORY DATA

The laboratory examinations in these cases showed significant changes in the total white blood cell counts, the absolute neutrophil counts, the refractive granules in the cytoplasm of the lymphocytes [10] and the sedimentation rate. The total white blood count is the average of counts obtained from both chambers of a hemocytometer. The differential count, used for the calculation of the absolute neutrophil and lymphocyte figures, was made in wet films stained supravitally with neutral red and Janus green. Two hundred cells were examined for each differential count, one hundred by each of two technicians.[11] To determine any quantitative change in the number of refractive granules in the lymphocytes, one hundred lymphocytes were examined, fifty by each of two technicians, and the average values used. The same technicians made all the differential counts and lymphocyte studies and, although there was constantly a slightly larger number of granules counted by one of the technicians, this possible source of error is constant throughout the data. The hemoglobin values were obtained from a standard Evelyn photometric hemoglobinometer. The percentage of reticulocytes and the platelet counts were determined in a wet preparation stained with brilliant cresyl blue, and at least 1,000 erythrocytes were counted. The sedimentation rates were obtained using a standard Wintrobe tube.

The total white blood count, absolute neutrophil and lymphocyte counts, sedimentation rate and lymphocytic granules are graphically presented for case 1 in figures 11 and 12. The hematologic responses of the other 3 patients are not shown but were similar to that seen in case 1. The preexposure blood data as plotted are taken from approximately one year of routine blood studies and are plotted without reference to the time interval between counts. The refractive granules in the lymphocytes are plotted by two methods. The percentage of lymphocytes with six or more granules

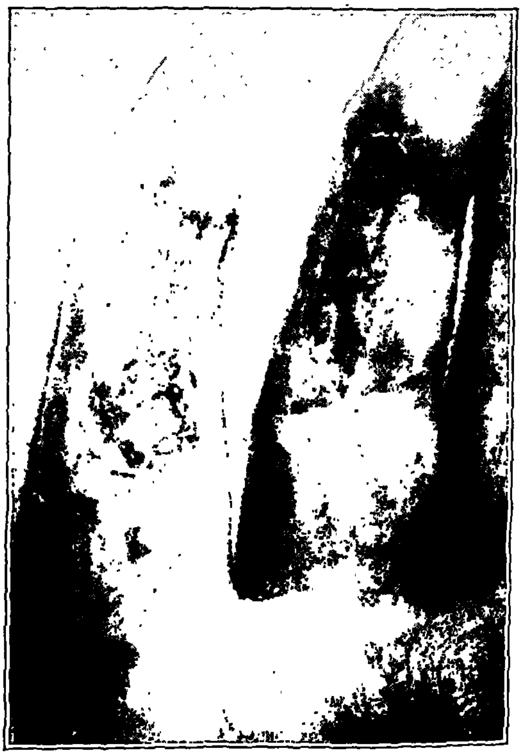

Fig. 10 (case 3).—One hundred and sixty-five days after exposure the tendon surface was still visible through a thin layer of fibrous tissue.

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[10] Dickie, A., and Hempelmann, L. H.: Morphologic Changes in the Lymphocytes of Persons Exposed to Ionizing Radiations, J. Lab. & Clin. Med. 32: 1045-1059 (Sept.) 1947.

[11] Technical assistance was given by Dorothy E. Poskonski and Ann C. Jarman

is used, since control counts on this patient had been obtained by this method previous to exposure and also because the cases reported in the literature previously had been studied in this fashion.[10] The number of granules per lymphocyte is a less arbitrary method of reporting the observations and is now used routinely by this laboratory. In the preexposure portion of the curve showing the percentage of lymphocytes with six or more granules all the values have been averaged, because fewer lymphocytes were examined per count for these routine preexposure observations.

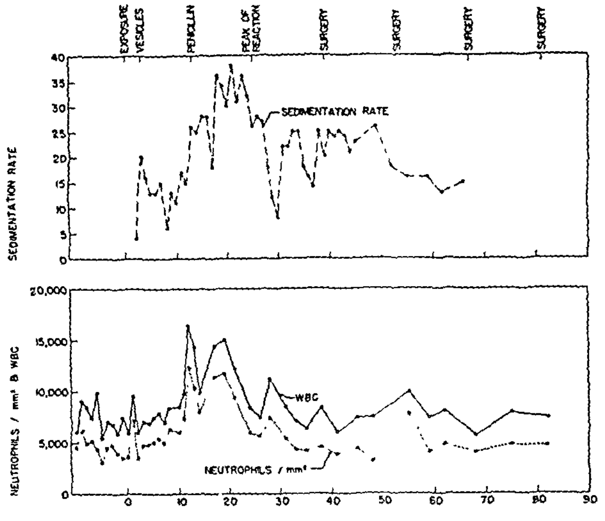

Fig. 11 (case 1).—Sedimentation rates, white blood cell counts and absolute neutrophil counts at various stages of treatment.

The response of the total white blood count, the neutrophil count and the sedimentation rate appeared to run parallel with the development of vesicles and bullae on the hands and the febrile response. Presumably the destruction of tissue which occurred during this time caused these hematologic changes. Thus, data on case 1 showed the severest formation of bullae and also the greatest changes in these blood tests.

There were no significant changes in the absolute lymphocyte count at any time after exposure. However, there was a definite morphologic change in these cells manifested by an increased number of refractive granules in the supravital preparations. This change was observed earlier than the increase in the neutrophils or the sedimentation rate. In case 2 the patient, who probably received more radiation than any of the others, had a lesser increase in refractive granules and a more rapid epithelization of the burned areas than occurred in cases 1 and 3. This suggests that the response of the lymphocytic granules may be related to the local disease of the hands and may possibly serve as an early indication of the seriousness of the burn, but further studies are needed to establish this point.

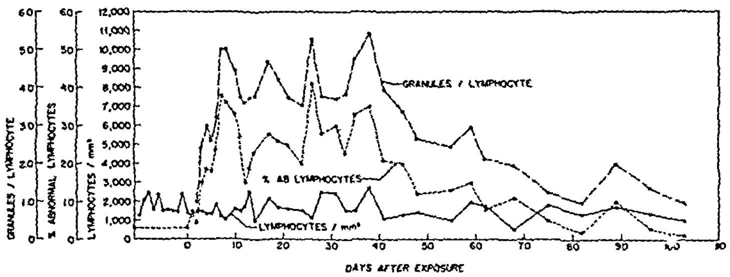

Fig. 12 (case 1).—Refractive granules in the cytoplasm of the lymphocytes at various stages of treatment.

A rise in reticulocytes to 1 to 2 per cent in all cases is difficult to explain. These patients were at sea level for about ten days and returned to Los Alamos (elevation 7,400 feet). It appears unlikely that this increase in altitude caused a reticulocyte response, because 4 men all had lived at Los Alamos for at least one year before their short sojourn at sea level. The reticulocytosis is more likely due to an erythroid response in the bone marrow following the destruction of tissue.

The hemoglobin values and the erythrocyte and platelet counts at no time showed significant variations from normal. The prothrombin times, bleeding times and clotting times were determined frequently during the course of the illnesses and were always within normal limits. The absolute monocyte, eosinophil and basophil counts did not disclose significant variation from the normal.

Urinalyses always gave normal results, and tests for radioactivity in twenty-four hour urine specimens collected on the third day after exposure resulted negatively.

Determinations of serum proteins with albumin-globulin ratios, serum bilirubin, alkaline phosphatase, cephalin flocculation and blood urea nitrogen, as well as daily nitrogen balance studies, were all normal during the illnesses.

TREATMENT

The initial treatment consisted of immobilization, elevation and cooling of the involved hands with ice packs. The men were placed on a high protein diet with supplementary multiple vitamins and were given rutin 20 mg. three times a day, the latter because of the possible therapeutic effects in capillary damage.[12]

Penicillin therapy, 300,000 units (duracillin®) per day, was started in case 1 after drainage of the bullae with the concurrent development of a low grade fever and increase in sedimentation rate; in cases 2 and 3 it was started after the first débridement. This was considered to be prophylactic therapy because of the possible deleterious effects of concurrent infection.

The surgical débridements were performed in cases 1, 2 and 3 on the thirty-ninth, fifty-third and sixty-seventh days after exposure, with the patient under general anesthesia because of the extreme tenderness of the tissue. An attempt was made to clean off all necrotic tissue without damaging the newly formed epithelium. The lesions were covered with petrolatum gauze, and pressure dressings were applied. These dressings were kept on for about fourteen days. Gentle manipulation of the involved fingers was carried out whenever possible while the patients were under anesthesia and throughout the course of the disease. Skin grafting has been performed in cases 1, 2 and 3 with satisfactory "takes."[13] In all cases, phase 4 of the laries actual thrombosis with interruption of blood flow was observed. By ten to fifteen days there was a definite decrease in the number of capillary loops, and during the third and fourth weeks some of the remaining loops had formed collateral loops into the area of destroyed capillaries. At the end of four months, a decreased number of capillaries remained and the collateral loops were apparent and functioning.

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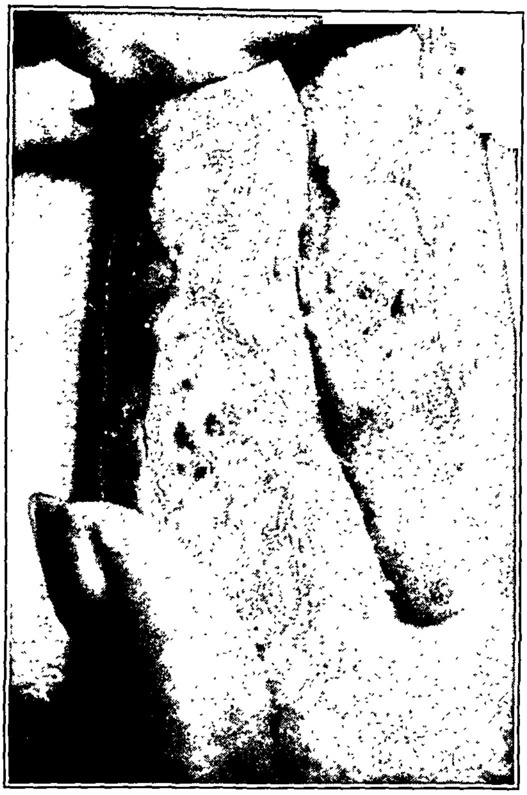
[12] Rekers, P. E., and Field, J. B.: Control of Hemorrhagic Syndrome and Reduction in X-Irradiation Mortality with a Flavanone, Science **107**: 16 (Jan. 2) 1948.

[13] Brown, J. B.; McDowell, F., and Fryer, M. P.: Surgical Treatment of Radiation Burns, Surg., Gynec. & Obst. **88**: 609-622 (May) 1949



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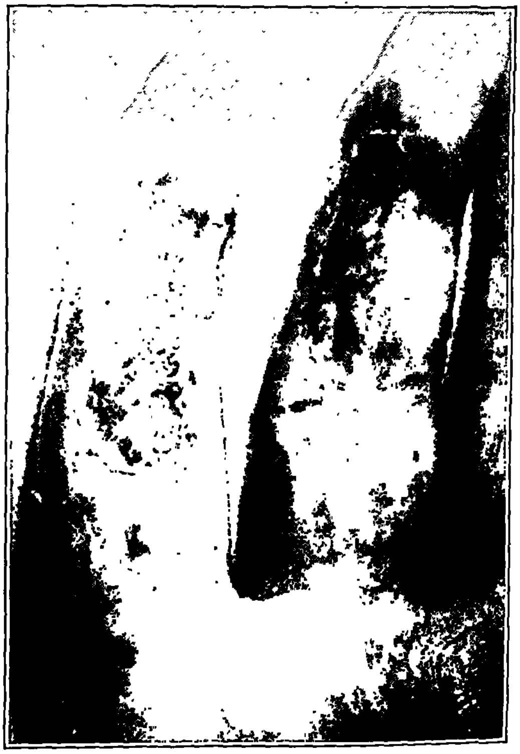

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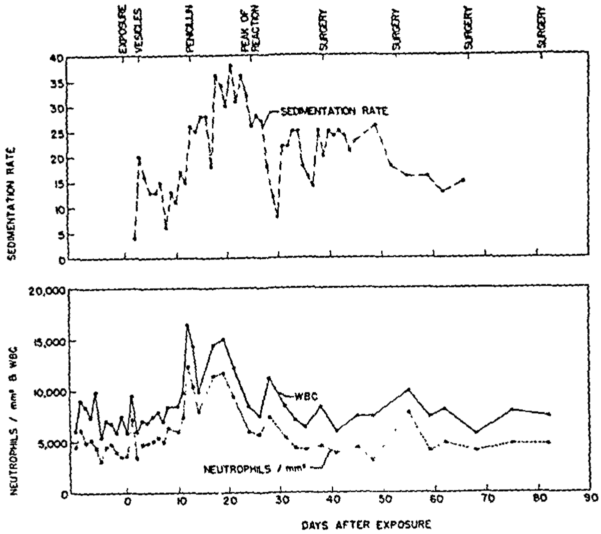

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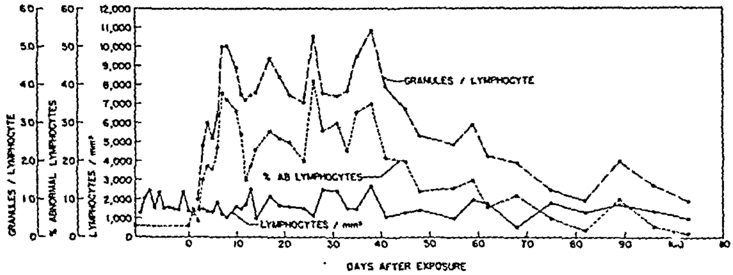

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SUMMARY AND CONCLUSION

Four cases of beta ray burns of the hands have been reported. Although small doses of beta rays are not considered a serious external radiologic hazard, this form of ionizing radiation is seriously destructive in larger doses. The clinical response to such irradiation may be divided into four phases:

1. A sensation of tingling and itching at the time of exposure followed within a matter of hours by a slight erythema and edema (sometimes associated with blanching of the skin), which lasts for two to three days.
2. A latent, asymptomatic period of three to five days.
3. A secondary erythema, which is soon followed by vesicle and bulla formation. These vesicles dry and desquamate after about three weeks, leaving a new layer of thin epithelium.
4. A chronic phase characterized by atrophic epithelium and loss of secondary epidermal structure. Telangiectases, hyperkeratoses and malignant degenerations are potential complications which may develop over a period of time.

Sometimes, especially in persons receiving a lesser exposure, phase 1 and 2 may pass unnoticed or may be absent altogether. In view of the time lapse between exposure and phase 3, any exposure to beta radiation should be taken seriously.

The only significant hematologic findings were a neutrophilia, an increased sedimentation rate, an increase in the number of refractive granules in the cytoplasm of the lymphocytes and a low grade reticulocytosis. Liver function tests, nitrogen balance studies and urinalyses were consistently normal. Local treatment consisted of routine burn therapy with accessory chilling and later surgical débridement and skin grafting. General treatment involved the use of rutin, high protein diet, multiple vitamins and parenteral penicillin. Prognosis is dependent on the status of the vascular supply to the burned areas, especially as related to the skin grafting. Careful late follow-up studies are necessary in order that early malignant changes may be recognized.

Amebiasis for the Clinician.—Amebiasis means the presence in the human body of *Endamœba histolytica.* The other amebas which are found at times in the human body, with the possible exception of *Diendamœba fragilis,* are nonpathogenic. *D. fragilis* has been associated with severe diarrhea by Hakansson and others, although its actual pathogenicity has not been established. For the physician and the medical student it is necessary only to recognize *E. histolytica* with certainty. A suspected ameba then is identified either as a pathogen, *E. histolytica,* or as a nonpathogen, needing no further attention except as a suggestive guide that the patient has been exposed to fecal or other contamination and, hence, has been exposed to risk of ingestion of cysts of *E. histolytica.* It is desirable that every physician have access to a reliable laboratory for diagnosis of *E. histolytica.* Failing such access, he can for himself often make the diagnosis of the one known pathogenic ameba. Knowledge of its diagnosis and treatment is essential for every practicing physician, but is too often lacking. . . . In the past 10 years, research has introduced no feasible new methods in diagnosis and treatment. However, the literature reflects two new emphases that are important. The first is attention to X-ray findings, especially in the cecum. The second is control of secondary bacterial infections of amebic lesions with penicillin and sulfa drugs.—Alfred C. Reed, M.D., Department of Medicine, Stanford University School of Medicine, San Francisco, *Stanford Medical Bulletin,* August 1949.

GENETICS OF ATHEROSCLEROSIS

Studies of Families with Xanthoma and Unselected Patients with Coronary Artery Disease Under the Age of Fifty Years

DAVID ADLERSBERG, M.D.
ALBERT D. PARETS, M.D.
and
ERNST P. BOAS, M.D.
New York

In a previous report[1] attention was called to the fact that familial xanthomatosis is by no means a rare disorder. It has long been so regarded only because its two most striking external manifestations, xanthoma tuberosum and xanthoma tendinosum, are met with infrequently. It was also pointed out that a close relation exists between this hereditary disorder and atherosclerosis. The present study enlarges and completes our data dealing with xanthomatous families and links the results with those of a previous investigation,[2] in which patients with coronary artery disease were studied for evidence of disturbed lipid metabolism.

FAMILIAL XANTHOMATOSIS

Thirty-Five Families and Twenty-Nine Additional Persons with Xanthomatosis

During the past few years in which we have searched patients for stigmas of xanthomatous disease, we have encountered 64 persons (index cases) with this hereditary disorder and have studied 137 members of the families of 35 of these patients. In the thirty-five families 172 persons were therefore available for analysis. Together with 29 patients with xanthomatosis whose families were not available for study, the series comprises 201 persons, 118 males and 83 females (see the accompanying table).

Among these 201 persons studied, 49 (24 per cent) exhibited what we have designated the full syndrome: that is, hypercholesterolemia, coronary artery disease and one or more of the following: xanthoma tuberosum or tendinosum, xanthelasma and corneal arcus.[3] The serum cholesterol level was determined in 175 of the 201 persons. One hundred and twenty-two (69 per cent) had hypercholesterolemia (300 mg. per hundred cubic centimeters or above).

In Bloor's original publication[4] of his method, 220 mg. per hundred cubic centimeters was stated to be the upper limit of normal. Peters and Man[5] determined the normal average serum cholesterol to be 194.1 mg. ± 35.6 mg. per hundred cubic centimeters in a study of 174 normal persons. As pointed out by Stecher and Hersh,[6] three times this standard deviation above the mean places the upper limit of normality at 300.9 mg. "Such a figure would allow only 1 or 2 persons in 1,000 to be above 300 mg. per hundred cubic centimeters and still be classified as normal in cholesterol concentration." In a former

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From the medical services of Mount Sinai Hospital.

Dr. L. C. Dunn, professor of zoology, Columbia University, assisted in the analysis of the genetic aspects of the families reported in this study; technical help was given by Mrs. Katherina Newerly, Mrs. Alice P. Freedman and Mrs. Beatrice P. Ferber.

[1] Boas, E. P., and Adlersberg, D.: Familial Hypercholesterolemia (Xanthomatosis) and Atherosclerosis, J. Mt. Sinai Hosp. **12:** 84 (May-June) 1945.

[2] Boas, E. P.; Parets, A. D., and Adlersberg, D.: Hereditary Disturbance of Cholesterol Metabolism: A Factor in the Genesis of Atherosclerosis, Am. Heart J. **35:** 611 (April) 1948.

[3] In view of the fact that arcus of the cornea is not limited to elderly persons or etiologically related to age, the designations arcus senilis and arcus juvenilis are inappropriate. The term corneal arcus describes the sign clinically and is applicable to any age. In European literature the sign is referred to as arcus lipoides.

[4] Bloor, W. R.: The Determination of Cholesterol in Blood, J. Biol. Chem. **24:** 227 (March 16) 1916.

[5] Peters, J. P., and Man, E. B.: The Interrelation of Serum Lipids in Normal Persons, J. Clin. Investigation **22:** 707 (Sept.) 1943.

[6] Stecher, R. M., and Hersh, A. H.: Note on the Genetics of Hypercholesterolemia, Science **109:** 61 (Jan. 21) 1949.

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma

Family	Member	Relationship to Index Case †	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
1 (See fig. 4)	M. M.*	(See text and fig 4)	46	M	764	+	+	+	+	..	
	J. B.		49	M	420	..	..	..	..	..	
	W. B.		47	M	344	..	..	..	..	..	
	C. B.		44	M	324	..	..	..	..	..	
	L. B.		51	M	256	..	..	..	..	..	
	I. B.		41	M	364	..	..	..	.	..	
	J. B.		7	M	380	..	..	..	..	..	
	M. K.		48	F	788	+	+	+	+	..	
	B. K.		21	M	242	..	..	..	..	..	
	C. M.		56	M	630	+	+	..	..	−	
	S. M.		26	M	425	..	..	..	..	..	
	I. B.		29	F	250	..	..	..	..	..	
	M. K.		23	F	480	..	..	..	..	..	
	T. M.		14	F	320	..	..	..	..	..	
	C. M.		57	M	388	+	..	..	..	..	
	B. M.		47	F	374	..	+	..	..	..	
	H. M.		25	M	374	..	..	..	..	..	
	M. M.		29	F	286	..	+	..	..	..	
	D. B.		64	F	340	..	..	..	..	+	
	D. B.		28	M	325	..	..	..	..	..	
2 (See fig. 5)	E. I.*	..	39	M	834	+	..	+	+	..	
	P. I.	F	73	M	364	..	..	+	..	−	
	H. I.	M	67	F	816	..	+	+	..	+	
	H. I.	B	48‡	M	648	+	+	+	+	..	Died, 48, cardiac infarction
	H. I.	B	38	M	512	..	..	..	..	..	
	Y. I.	S	42	F	316	..	+	..	+	..	
	R. M.	C	31	M	227	..	..	..	..	..	
	T. M.	C	23	F	1,032	..	..	..	+	..	
3 (See fig. 6)	M. K.*	.	29	F	420	+	..	..	+	..	
	J. C.	F	58‡	M	§	+	+	..	..	..	
	M. C.	M	58	F	333	..	..	+	..	+	
	T. C.	B	33	M	240	..	..	..	..	+	
	J. C.	B	22	M	895	+	..	+	+	..	
	H. C.	S	34	F	240	..	..	..	..	..	
	M. C.	S	25	F	200	..	..	..	..	..	
	P. K.	D	5	F	260	..	..	..	..	..	
4 (See fig. 7)	S. S.*	.	41‡	M	700	+	+	..	+	..	Died, 41, cardiac infarction
	M. F.	S	50	F	272	..	..	..	..	+	
	S. S.	Sn	13	M	471	..	..	..	..	..	
	M. S.	D	7	F	295	..	..	..	..	..	
	A. E.	A	59	F	490	..	..	..	..	+	
5 (See fig. 8)	S. B.*	.	43‡	F	525	+	+	..	..	+	Died, 43, suddenly
	C. B.	B	50	M	410	+	..	..	..	..	
	M. B.	B	39	M	560	..	..	+	+	..	
	I. D.	B	37‡	M	§	+	..	..	.	..	Died, 37, cardiac infarction
	S. D.	B	31‡	M	§	+	..	..	..	+	Died, 31, cardiac infarction
	M. D.	S	54	F	415	..	..	..	..	..	
	J. B.	D	24	F	535	..	..	..	..	..	
	K. B.	D	16	F	540	..	..	..	..	..	
	S. D.	Ne	12	M	210	..	..	..	..	..	
	R. D.	Ni	16	F	140	..	..	..	..	..	
	E. K.	Ni	21	F	290	..	..	..	..	..	
6	E. F.*	..	46	M	430	+	+	..	+	..	Gout, hypothyroidism, cholecystitis
(See fig. 9)	B. F.	F	78‡	M	§	+	..	..	..	..	
	S. F.	M	78‡	F	550	..	+	..	..	..	Hypothyroidism, diabetes mellitus
	S. F.	Sn	16	M	300	..	..	..	..	..	
7 (See fig. 10)	J. F.*	..	46	M	515	+	+	..	+	..	
	P. F.	M	72	F	269	..	+	..	..	..	
	M. F.	B	42	M	432	..	+	..	..	..	
	M. A.	S	43	F	461	+	+	..	..	..	
8 (See fig. 12)	A. K.*	..	29	F	501	+	+	..	+	..	Maternal grandfather and his three brothers died of "angina pectoris"
	M. K.	M	56‡	F	§	+	+	..	+	..	Died, 56, cardiac infarction
	F. K.	B	24	M	§	..	..	..	..	+	
	T. K.	B	19	M	401	..	..	..	..	..	
9 (See fig. 11)	I. F.*	..	48	F	360	..	+	..	..	..	Cholecystitis
	B. S.	F	69	M	§	+	..	..	..	..	
	A. S.	M	60‡	F	§	+	..	..	..	..	Died, 60, cardiac infarction
	E. S.	B	46	M	400	+	..	..	..	..	
	G. S.	B	39	M	500	+	..	..	..	..	
10	R. S.*	..	31	M	475	+	+	..	..	..	
	R. S.	M	61	F	380	..	..	..	..	..	
	H. S.	B	37	M	375	..	..	..	..	..	
	L. S.	B	26	M	175	..	..	..	..	..	
	J. S.	Ne	3½	M	195	..	..	..	..	..	
	B. S.	Ne	1½	M	217	..	..	..	..	..	
11	H. A.*	.	40	M	272	+	..	+	..	..	
	M. A.	B	38	M	241	..	..	..	..	..	
	J. A.	B	38	M	357	..	..	+	..	..	
	S. A.	B	25	M	220	..	..	..	..	..	
	A. F.	S	35	F	220	..	..	..	..	..	
	S. N.	S	28	F	262	..	..	..	..	..	
12	J. W.*	..	47	M	425	+	..	+	..	..	
	B. W.	B	51	M	168	..	..	..	..	..	
	M. W.	B	45	M	140	..	..	..	..	..	
	I. W.	B	42	M	274	..	..	..	..	..	
	R. G.	S	58	F	306	..	..	..	..	..	
	A. G.	S	49	F	257	..	..	..	..	..	

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma—Continued

Family	Member	Relationship to Index Case †	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
13	I. K.*	..	46	M	220	+	..	+	..	..	
	H. K.	B	52	M	220	..	..	..	..	..	
	B. K.	B	44	M	325	..	..	..	..	..	
	J. K.	B	38	M	257	..	..	..	..	+	
	B. K.	S	50	F	232	..	..	..	..	..	
	S. H.	S	39	F	284	..	..	..	..	..	
14	B. S.*	..	56	F	518	+	+	..	..	..	Diabetes mellitus; husband has xanthelasma
	S. S.	Sn	39	M	311	..	+	..	..	..	
	S. S.	Sn	29	M	326	..	..	..	..	..	
	M. P.	D	35	F	368	..	+	..	..	..	
	M. G.	D	34	F	246	..	..	..	..	..	
15	B. R.*	..	34	F	336	+	..	..	..	+	
	S. R.	B	40	M	357	..	..	+	..	..	
	D. R.	B	30	M	227	..	..	..	..	..	
	A. R.	S	39	F	207	..	..	..	..	..	
	A. R.	S	32	F	241	..	..	..	..	..	
16	F. Z.*	..	48	F	345	+	..	..	..	+	
	B. M.	B	47	M	320	..	..	..	..	..	
	E. M.	B	42	M	240	..	..	..	..	..	
	C. C.	S	53	F	330	..	..	..	..	..	
	G. S.	S	39	F	304	..	..	..	..	..	
17	M. S.*	..	42	M	450	..	+	..	+	..	
	G. S.	F	62	M	§	..	+	..	..	..	
	B. S.	G	58‡	M	§	..	+	..	..	..	
	R. S.	U	64‡	M	§	+	..	..	..	..	
	B. L.	A	60	F	§	+	..	..	..	..	
18	S. A.*	..	49	F	360	+	+	..	..	+	
	N. A.	B	42	M	§	+	..	..	..	..	
	B. A.	S	40	F	§	..	+	..	..	..	
	J. C.	S	55	F	§	..	+	..	..	..	
19	H. R.*	..	38	M	726	+	+	..	..	..	
	R. R.	B	27	M	178	..	..	..	..	..	
	D. R.	S	42	F	200	..	..	..	..	..	Diabetes mellitus
	M. R.	S	34	F	458	..	..	..	..	..	Cholecystitis
20	M. M.*	..	51	M	360	+	+	..	..	+	
	H. M.	F	60‡	M	§	..	+	..	..	..	Died, 60, cerebral hemorrhage
	F. M.	B	61	M	§	..	+	..	..	..	
	D. M.	S	58	F	§	..	+	..	..	..	
21	M. A.*	..	56	F	760	+	..	..	..	..	
	J. A.	H	59	M	§	..	+	..	..	..	
	H. A.	Sn	35	M	420	..	..	..	..	..	
	S. A.	Sn	25	M	400	..	..	..	..	..	
22	R. W.*	..	31	F	730	..	+	..	..	..	
	S. F.	M	51	F	230	..	..	..	..	..	
	J. F.	B	29	M	321	..	..	..	..	..	
	M. F.	B	19	M	289	..	..	..	..	..	
23	C. B.*	..	55	M	425	+	+	..	..	..	
	L. G.	S	58	F	358	..	..	..	..	..	
	A. B.	Sn	31	M	259	..	..	..	..	..	
	K. D.	D	30	F	256	..	..	..	..	..	
24	S. D.*	..	47	M	333	+	..	+	..	+	
	P. D.	B	53	M	245	..	..	..	..	..	
	H. D.	B	49	M	198	..	..	..	..	..	
	M. D.	B	42	M	214	..	..	+	..	..	
25	R. F.*	..	51	F	548	+	+	..	..	+	
	A. S.	S	48	F	326	..	..	..	..	..	
	S. F.	D	23	F	380	..	..	..	..	..	
26	L. W.*	..	41	F	600	..	+	..	..	+	
	L. W.	Sn	11	M	400	..	..	..	..	..	
	R. W.	D	21	F	410	..	..	..	..	..	
27	S. G.*	..	51	F	570	+	..	..	+	..	
	M. G.	B	45	M	§	..	+	..	..	..	
	T. G.	S	59‡	F	§	+	..	..	+	..	Died suddenly
28	A. S.*	..	31	M	500	+	+	+	..	..	
	G. S.	F	58‡	M	§	+	..	..	..	..	Died, 58, cardiac infarction
	M. S.	B	29	M	360	..	..	..	..	..	
29	I. S.*	..	51	F	362	+	+	..	..	..	
	C. M.	S	58	F	362	..	+	..	..	..	
	H. M.	Ni	38	F	§	..	+	..	..	..	
30	M. S.*	..	45	M	336	+	..	+	..	..	
	M. S.	B	50	M	308	..	..	..	..	..	
	I. F.	S	47	F	424	..	..	..	..	..	
31	H. P.*	..	52	M	322	+	..	+	..	..	
	L. B.	S	54	F	325	..	..	..	..	..	
	T. R.	S	47	F	350	..	..	..	..	..	
32	J. C.*	..	55	M	315	+	..	+	..	..	
	M. C.	B	65	M	325	..	..	..	..	..	
	A. K.	S	59	F	330	..	..	..	..	..	
33	C. G.*	..	51	M	326	+	+	..	..	..	Diabetes mellitus
	A. G.	F	66‡	M	§	..	+	..	..	..	
	H. G.	B	59	M	§	+	..	..	..	..	
34	S. L.*	..	44	M	469	+	..	..	..	..	
	S. L.	B	52	M	480	+	..	..	..	..	
35	I. N.*	..	33	M	680	..	+	..	+	..	
	R. N.	M	60	F	§	+	+	..	..	..	

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma—Continued

Member	Relationship to Index Case†	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
				Individual Cases						
M. F.		61	M	300	+	+	..	..	+	
F. S.		60	F	515	..	+	..	+	..	
H. G.		47	M	378	+	..	..	+	..	
E. R.		40	F	357	+	+	..	..	+	
M. L.		43	M	342	+	+	..	..	..	
A. A.		51	F	262	+	+	..	..	..	
L. M.		48	M	412	+	+	..	..	..	
S. C.		47	M	470	+	+	..	..	..	
F. P.		50	F	250	+	+	..	..	..	
N. B.		48	M	372	+	..	+	+	..	
D. T.		50	M	276	+	+	..	..	..	
J. W.		40	M	450	+	+	..	..	..	
J. S.		42	M	456	..	+	..	..	..	
H. A.		47	M	328	+	..	+	..	..	
C. S.		46	F	600	+	+	..	+	..	Cholecystitis
E. W.		38	M	310	+	..	+	..	..	
M. B.		50	M	280	+	..	+	..	..	
I. C.	..	47	M	380	+	..	+	..	..	
O. S.		42	M	232	+	..	+	..	..	
R. R.		41	F	376	+	..	+	..	..	
I. B.		49	F	320	+	..	+	..	..	
S. M.		42	M	386	+	..	+	..	..	
I. P.		50	M	356	+	..	+	..	..	
I. G.		43	M	291	+	..	+	..	..	
E. K.	..	49	F	236	+	..	+	..	..	
L. E.	..	43	M	396	+	..	+	..	..	
R. A.		47	M	233	+	..	+	+	..	
J. N.		48	M	358	+	..	+	..	..	
E. R.		49	F	400	..	..	..	+	..	

*Index case.

† Abbreviations indicating relationship to index case: F, father; M, mother; B, brother; S, sister; Sn, son; D, daughter; U, uncle; A, aunt; C, cousin; Ne, nephew; Ni, niece; H, husband, and G, grandparent.

‡ Died.

§ Patient not examined personally, but data based on autopsy records, communications from other physicians or reliable information submitted by kin

study[2] we selected 300 mg. per hundred cubic centimeters as indicative of hypercholesterolemia. Wilkinson, Hand and Fliegelman,[7] however, basing their criteria of hypercholesterolemia on the genetic pattern of transmission of xanthomatosis, have expressed their belief that 280 mg. per hundred cubic centimeters may be considered an abnormal elevation.

Xanthelasma was present in 61. Tuberous or tendinous xanthoma was found in 25, all of whom had hypercholesterolemia except 2, whose cholesterol level was unknown. These 2 persons had died of cardiac infarction before these studies were undertaken. Corneal arcus was present in 35, 28 of whom were less than 50 years of age.

In the entire series of 201 persons, coronary artery disease was present in 80 (40 per cent); among the 172 members composing the thirty-five families, it was present in 54 (31 per cent). The high incidence of coronary artery disease in this material resulted in part because most patients (index cases) sought treatment for their cardiac disorder. Nonetheless, the data indicate that the two abnormalities found most frequently among members of xanthomatous families are elevated serum cholesterol level and coronary atherosclerosis. Xanthelasma and corneal arcus are next in frequency while xanthomatosis, the stigma from which the disorder derives its name, is found least often.

The association of hypercholesterolemia with coronary artery disease in members of xanthomatous families is striking. Among the 80 patients of the entire series who had disease of the coronary vessels, the serum cholesterol level was determined in 66 and found elevated above 300 mg. per hundred cubic centimeters in 57. Among the 54 patients with coronary artery disease who were members of the thirty-five families investigated, the serum cholesterol was determined in 40 and found above normal in 38. Also noteworthy is the early onset of coronary atherosclerosis. In 49 of the 80 patients (61 per cent), cardiac symptoms had appeared before the age of 50 years. Of these 49, all but 5 exhibited hypercholesterolemia at the time of examination. Hypertension was an infrequent observation; it was present in only 12 of the patients with coronary artery disease.

Typical cutaneous and tendinous lesions characterizing the disorder are shown in figures 1 to 3. Discovery of such lesions should alert the examiner to study members of the patient's family for similar lesions and also for hypercholesterolemia and cardiac disease, latent or overt.

GENETIC CONSIDERATIONS

The hereditary nature of familial xanthomatosis has been emphasized by many authors.[8] However, its mode of transmission has been much debated. This has been due in part to the tendency of most investigators to use the cutaneous lesions instead of serum cholesterol levels as the characteristic sign of the disorder. At one extreme are Thannhauser and Schmidt,[8e] who have expressed their belief that the disorder is transmitted as a recessive trait. This would be unlikely if the frequency of the gene for this condition in the general population should prove to be low (below 0.5 per cent), because in that case a significant increase in the incidence of cousin marriages among the parents of affected persons should be found. This has not been observed. Müller[8b] and Svendsen[8c] have favored a dominant mode of transmission as have also Bloom, Kaufman and Stevens.[8d] The last-mentioned workers attempted to determine whether increased serum cholesterol or xanthoma, or both, were dominant traits by studying one family of ten siblings, several of whom exhibited the full syndrome of hypercholesterolemia, xanthoma and cardiovascular disease. Although their observations are not conclusive, they offer strong support for belief that this syndrome is inherited as a dominant trait. The authors also stress that hypercholesterolemia rather than xanthomatosis is the principal manifestation of the inherited factor which produces, under certain conditions, cutaneous as well as cardiovascular lesions. Our own observations published subsequently[1] tended to support the view that hypercholesterolemia is transmitted as a dominant trait. Recently, Wilkinson, Hand and Fliegelman[7] presented the best evidence to date that familial hypercholesterolemia is transmitted as an "incomplete" dominant trait. The results of the present study tend, in general, to confirm the postulate that hypercholesterolemia represents the heterozygous abnormal state while xanthoma represents the homozygous abnormal state. Descent tables of several instructive series of familial xanthomatosis are presented in figures 4 to 12 to aid in clarifying genetic factors.

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[7] Wilkinson, C. F. Jr.; Hand, E. A., and Fliegelman, M. T.: Essential Familial Hypercholesterolemia, Ann. Int. Med. **29:** 676 (Oct.) 1948.

[8] (*a*) Gossage, A. M.: The Inheritance of Certain Human Abnormalities, Quart. J. Med. **1:** 331, 1908. Lane, G. C., and Goodman, J. Jr.: Xanthoma Tuberosum, Arch. Dermat. & Syph. **32:** 377 (Sept.) 1935. Sperry, W. M., and Schick, B.: Essential Xanthomatosis: Treatment with Cholesterol-Free Diet in Two Cases, Am. J. Dis. Child. **51:** 1372 (June) 1936. (*b*) Müller, C.: Xanthomata, Hypercholesterolemia, Angina Pectoris, Acta med. Scandinav., 1938, supp. 89, p. 75. (*c*) Svendsen, M.: Are Supernormal Cholesterol-Values in Serum Caused by a Dominantly Inherited Factor? ibid. **104:** 235, 1940. (*d*) Bloom, D.; Kaufman, S. R., and Stevens, R. A.: Hereditary Xanthomatosis, Arch. Dermat. & Syph. **45:** 1 (Jan.) 1942. (*e*) Thannhauser, S. J., and Schmidt, G.: Lipins and Lipidoses, Physiol. Rev. **26:** 275 (April) 1946.

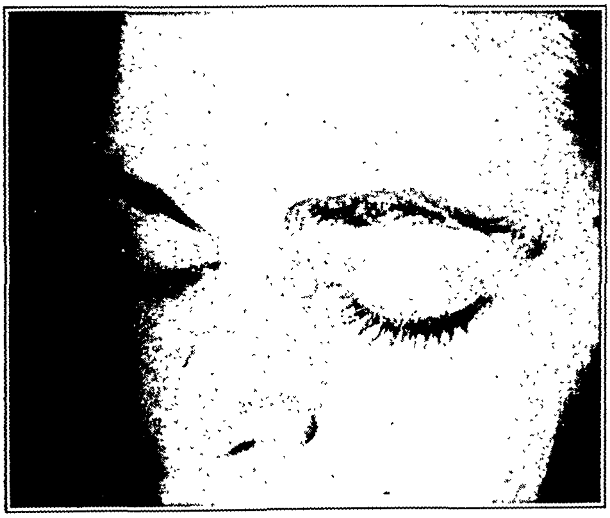

Fig. 1.—Xanthelasma of A. K., a member of family 8 in the accompanying table.

Figure 4 illustrates a kindred in which hypercholesterolemia is traceable through three generations. In the mating of A-1 and A-2 there were 3 offsprings, all of whom had hypercholesterolemia and coronary artery disease. Two of them had tendon xanthomas as well. Of the 7 grandchildren, the oldest of whom was 29 years of age, cholesterol determinations were made in 5; in 3 of these it was distinctly elevated. Both A-1 and A-2 had been married previously, and each had had offspring from a different partner. We examined 2 of 7 living descendants resulting from the earlier union of A-2 and A-3 and found hypercholesterolemia without manifest disease in the 2. The union of A-1 and A-4 had resulted in 4 offspring, 1 of whom had 10 descendants. We examined 5 of the 10 descendants, 1 being in the third generation, and found all 5 to have elevated serum cholesterol but no evidence of heart disease or xanthoma. We were also able to examine the son of a sibling of A-1. This person, B-1, has hypercholesterolemia and coronary artery disease. His wife, B-2, though not a member of the original family, has xanthelasmas and hypercholesterolemia. The union of B-1 and B-2 resulted in 2 offspring, 1 of whom has a serum cholesterol level of 374 mg., and the other 286 mg., per hundred cubic centimeters. Genetic analysis of this descent table indicates that A-1 and A-2 can be presumed to have had hypercholesterolemia. Their union resulted in a high frequency of hypercholesterolemia, xanthoma and heart disease. Union of A-2 (presumed to have hypercholesterolemia) with A-3 (presumably normal) reduced the incidence of manifest lesions in the offspring. A similar situation resulted from the union of A-1 (presumed to have hypercholesterolemia) with A-4 (presumably normal). However, hypercholesterolemia itself was exhibited by descendants in the third generation. Other families in which hypercholesterolemia can be traced through three generations are shown in figures 7 and 9.

Transmission of the metabolic fault as a dominant trait is *exemplified by the family in figure 5. In this* kindred both A-1 and A-2 have hypercholesterolemia. All 4 of their offspring also ha[illegible] 3 have xanthoma and 2 have [illegible] One of the latter has since died of myocardial infarction. It is also interesting to note that both parents have corneal arcus, which 2 of the offspring also exhibit, 1 being 39 years of age. In this family it is assumed that the mating of heterozygotes, A-1 and A-2, each of whom carried one abnormal cholesterol gene, produced homozygous abnormal persons with severe disease; namely, xanthoma. These xanthomatous subjects probably carry two abnormal cholesterol genes. With one exception,[9] our data reveal that patients with xanthoma are the offspring of two hypercholesterolemic parents, in instances in which the cholesterol determination of the parents could be made. In this connection it should be noted that every patient in the entire series (see the table) who exhibited xanthoma (that is, was an abnormal homozygote) had an elevated serum cholesterol level.

In the family represented in figure 6 one parent was known to have hypercholesterolemia; the status of the other was not determined. Xanthoma and coronary artery disease were present in 2 offspring. A similar situation obtains in figure 9. In both of these families the parent whose cholesterol level was unknown may be presumed to have been an abnormal heterozygote with an elevated serum cholesterol level.

Four instances of coronary artery disease among six siblings of a xanthomatous family are illustrated in figure 8. Three of the 4 died suddenly of cardiac infarction while relatively young. The index case, B-3, came to our attention when the woman had coronary thrombosis at 43 years of age. The cholesterol level of the blood was determined because of the presence of xanthelasmas and was found to be 525 mg. per hundred cubic centimeters. The patient died suddenly a few months later. Investigation of the remaining living members of her family revealed stigmas of hypercholesterolemia as indicated in the family tree. B-5 and B-6 were known to have died of cardiac infarction at the ages of 37 and 31, respectively. The autopsy record of B-6 revealed far advanced atherosclerosis of unknown origin in a young man. In retrospect the true nature of this patient's disorder became apparent.

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[9] The exception, A-2 in figure 10, may be more apparent than real, for serum cholesterol levels of a hypercholesterolemic person, unlike those of a normal subject, tend to fluctuate greatly at different times. While the fluctuations are usually within the supranormal range, an occasional value will fall below the accepted level of 300 mg. per hundred cubic centimeters.

The frequent association of xanthoma and coronary artery disease in members of affected families and the frequency of coronary atherosclerosis in these families might lead one to suspect that perhaps atherosclerosis, like xanthoma, represents the homozygous abnormal state. The families represented in figures 8, 11 and 12, in which a relatively high frequency of coronary artery disease is seen, would seem to lend support to this concept. Actually, such is not the case. As noted previously, not all patients with coronary artery disease exhibit hypercholesterolemia and xanthoma. By definition the abnormal homozygote will have hypercholesterolemia and either tendinous or tuberous xanthoma.

UNSELECTED PATIENTS

One Hundred and Twenty-Two Unselected Patients Under Fifty Years of Age with Coronary Artery Disease

While the study reported in the foregoing section of this article was in progress a second related investigation was conducted.[2] The material consisted of (1) 122 patients with proved coronary artery disease whose symptoms began under the age of 50 years and (2) the families of 50 of these patients. The patients with cornonary artery disease were unselected, consecutive patients as seen routinely in office practice. Patients known to be members of a xanthomatous family were excluded. All patients and family members were examined for clinical evidence of disturbed lipid metabolism, and one or more serum cholesterol determinations were made. Among the 122 patients with coronary atherosclerosis, the mean serum cholesterol was 316 mg. per hundred cubic centimeter (± 7.49, standard deviation of the mean). This agrees in general with the cholesterol levels found by others[10] who studied cholesterol concentration in coronary artery disease. Seventy-one (58 per cent) of the 122 patients exhibited serum cholesterol elevated above 300 mg. The distribution of cholesterol values is charted in figure 13.

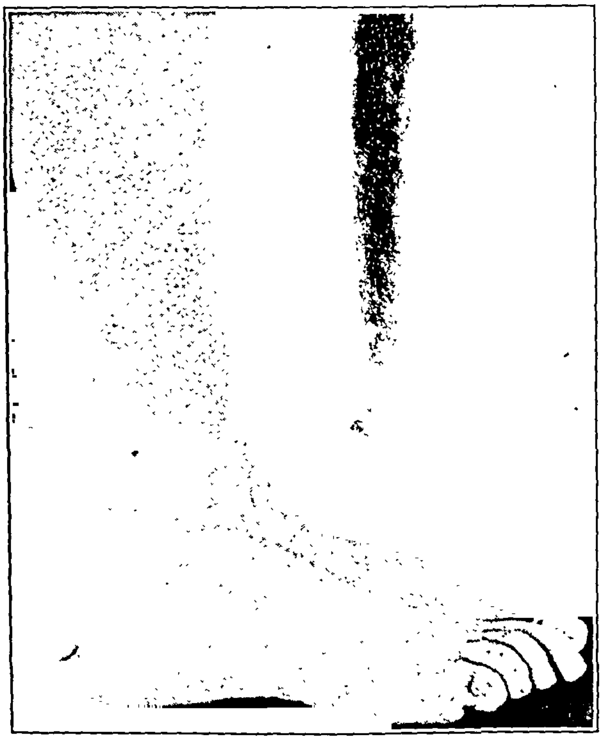

Fig. 2.—Achilles tendon xanthoma of A. K., family 8.

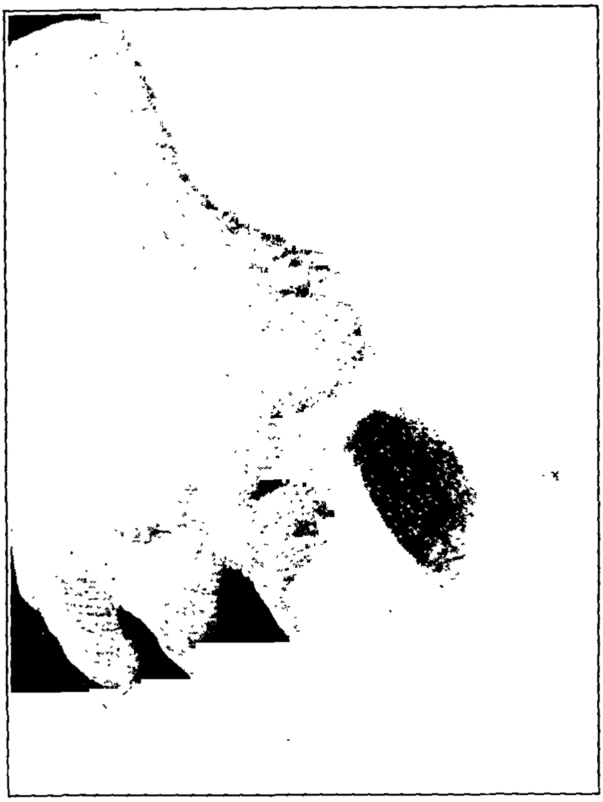

Fig. 3.—Xanthoma of hand of S. S., a member of family 4 in the accompanying table.

Corneal arcus was present in 22, xanthelasma in 12 and xanthomatosis in 3 of the 122 patients studied. Hypertension was present in only 21. Recently Morrison, Hall and Chaney[10b] found serum cholesterol elevated above 260 mg. per hundred cubic centimeters in 68 per cent of 70 patients who experienced cardiac infarction under the age of 60 years.

In fifteen of the fifty families studied (30 per cent) all or most siblings exhibited hypercholesterolemia. In nine more families one half of the siblings exhibited hypercholesterolemia.

COMMENT

Frequent involvement of the cardiovascular system in familial xanthomatosis has long been recognized.[11] Among 65 patients with xanthoma of the skin Montgomery[12] found 40 per cent affected with coronary artery or occlusive vascular disease of the extremities.

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[10] (*a*) Steiner, A., and Domanski, B.: Serum Cholesterol Level in Coronary Arteriosclerosis, Arch. Int. Med. **71**: 397 (March) 1943. Lerman, J., and White, P. D.: Metabolic Changes in Young People with Coronary Heart Disease, J. Clin. Investigation **25**:914, 1946. Herrmann, G. R.: Cholesterol Levels in Various Diseases and the Effects of Decholesterizing Agents, Texas State J. Med. **42**:260 (Aug.) 1946. (*b*) Morrison, L. M.; Hall, L., and Chaney, A. L.: Cholesterol Metabolism: Blood Serum Cholesterol and Ester Levels in Two Hundred Cases of Acute Coronary Thrombosis, Am. J. M. Sc. **216**:32 (July) 1948.

[11] Fagge, C. H.: Xanthomatous Diseases of the Skin: I. General Xanthelasma or Vitiligoidea, Tr. Path. Soc. London **24**: 242, 1873.

[12] Montgomery, H.: Cutaneous Manifestations of Diseases of Lipoid Metabolism, M. Clin. North America **24**:1249 (July) 1940.

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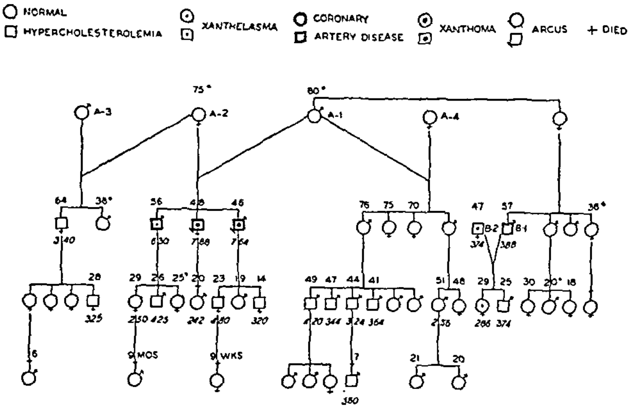

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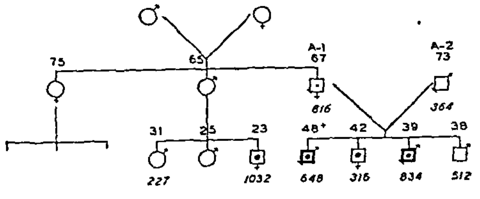

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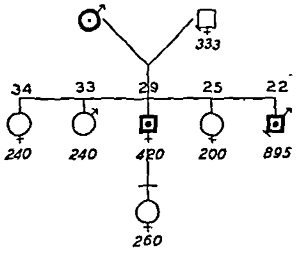
That the elevated serum cholesterol of the siblings of patients with coronary artery disease is not due to chance but is clinically significant has been demonstrated by Stecher and Hersh,[6] who applied a standard genetic test for mode of inheritance to thirty-seven of the fifty families that we investigated. They found that 67 of the 126 children who comprised these thirty-seven families were affected with hypercholesterolemia. The proportion of children expected to be affected if one parent was hypercholesterolemic and the other normal would be 50 per cent of the total, or 70.5 persons, with a standard deviation of 4.8. Because the number actually affected with hypercholesterolemia closely fits this 1 : 1 mendelian ratio, it is probable that in these families as in the families with xanthoma a hereditary mechanism is involved. By analogy with similar data obtained in other hereditary diseases[13] it is probable that the metabolic disturbance which produces hypercholesterolemia is transmitted as a dominant trait.



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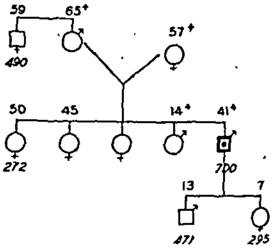

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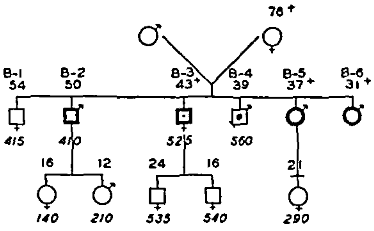

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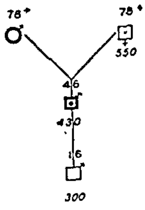

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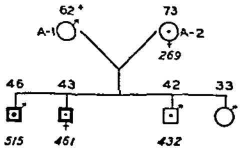

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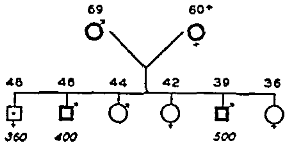

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Similar observations have also been reported recently by others.[19] Detailed discussion of the many additional factors involved in the genesis of arteriosclerosis will be found in extensive reviews by Hueper [20] and Katz and Dauber [21] and in the recent summarization of the problem by Gubner and Ungerleider.[22]

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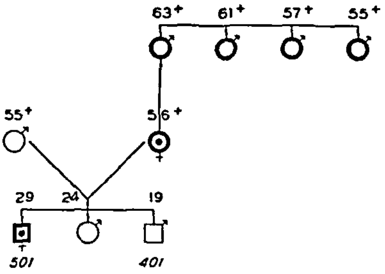
Thirty-five families with xanthoma comprising 172 members and an additional 29 persons known to belong to such families (total 201 persons) were investigated for hypercholesterolemia, coronary artery disease and other stigmas commonly found in this disorder. Serum cholesterol was determined in 175 of the 201 subjects and found elevated above 300 mg. per hundred cubic centimeters in 122 (69 per cent). Coronary artery disease was found in 80 patients of the entire series. Serum cholesterol was determined in 66 of these 80 patients and found elevated above 300 mg. in 57.



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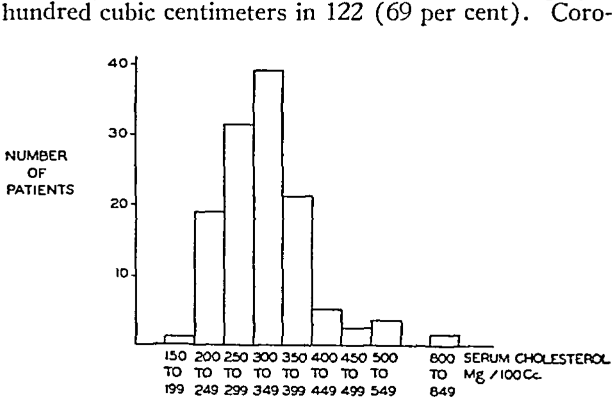

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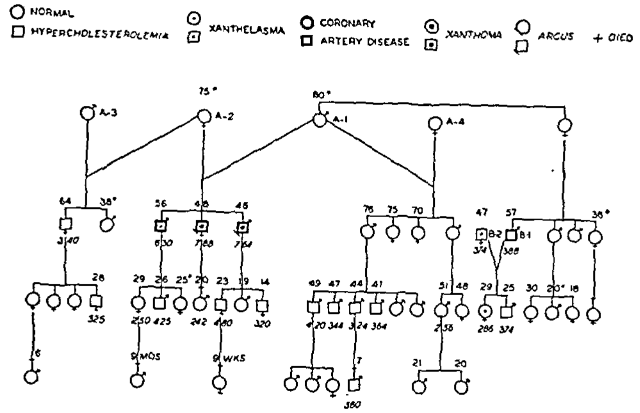

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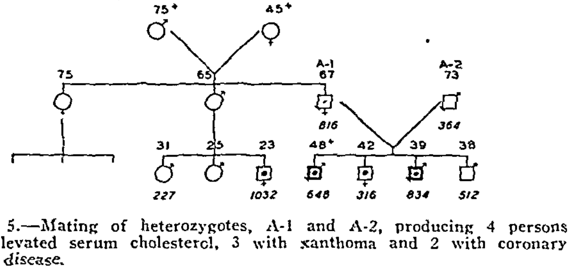

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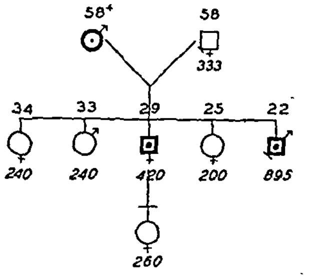

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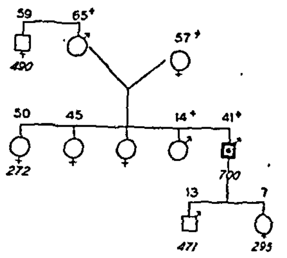

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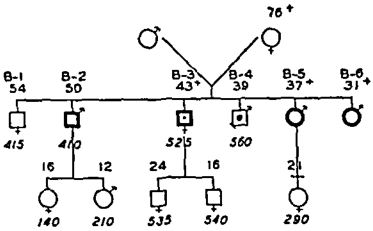

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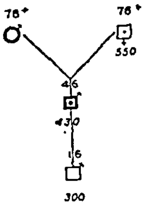

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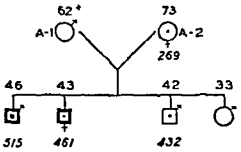

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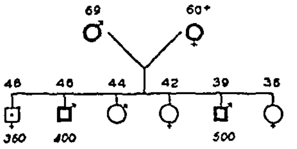

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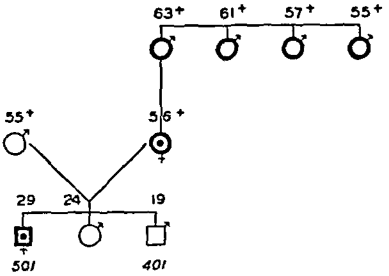

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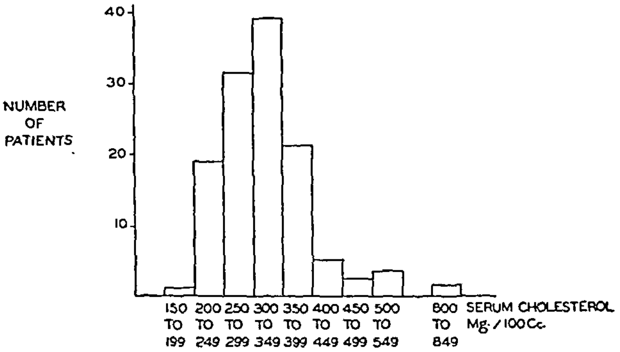

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Cardiac symptoms developed before age 50 in 49 patients. Among the 172 members comprising the thirty-five families, 54 had coronary artery disease and the serum cholesterol was elevated in 38 of the 40 in whom it was determined. Among the 201 persons comprising the total series, xanthelasma was present in 61. Tuberous or tendinous xanthoma was observed in 25 persons, all of whom had hypercholesterolemia; corneal arcus occurred in 35. Genetic analysis of the families supports the concept that this disturbance of cholesterol metabolism is inherited as an "incomplete" dominant trait.

The results obtained in the study of xanthomatous families were compared with those of a previous investigation in which 122 patients with proved disease of the coronary arteries, unselected except as to age (under 50 years) were examined for the presence or absence of elevated serum cholesterol and stigmas associated with it. Seventy-one (58 per cent) had hypercholesterolemia. In addition, fifty families of these 122 patients were studied. In fifteen families all or most siblings exhibited hypercholesterolemia, as did one half of the siblings in nine other families. Many siblings also exhibited corneal arcus and xanthelasma; a few, xanthoma. Genetic analysis of these sibships[6] reveals that the number affected with hypercholesterolemia fits a 1 : 1 mendelian ratio and that hereditary transmission, probably as a dominant trait, is responsible for the distribution of hypercholesterolemia.

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The serum cholesterol of all relatively young patients affected with coronary atherosclerosis should be determined as the initial step in uncovering hypercholesterolemia in members of their immediate family. Those whose cholesterol level is found to be elevated should be examined for latent cardiovascular disease and should be kept under permanent medical supervision.

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20. Hueper, W. C.: Arteriosclerosis, Arch. Path. **39**:187 (March) 1945.

21. Katz, L. N., and Dauber, D. V.: Pathogenesis of Atherosclerosis, J. Mt. Sinai Hosp. **12**: 362 (May-June) 1945.

22. Gubner, R., and Ungerleider, H. E.: Arteriosclerosis: A Statement of the Problem, Am. J. Med. **6**: 60 (Jan.) 1949.

Army Surgeon Brought Vaccination to United States.—In 1800, Benjamin Waterhouse, an Army surgeon, brought vaccination to the United States. Impressed by reports from Europe, he procured a small supply of smallpox vaccine from England and used it on seven people, including his own children. They proved immune, and from that small beginning grew the widespread practice of vaccination which has practically removed this once-dread disease from America.—Release, Surgeon's General Office, July 1, 1949.

CANCER OF THE BILIARY TRACT AND PANCREAS

Diagnosis from Cytology of Duodenal Aspirations

HENRY M. LEMON, M.D.
and
WALTER W. BYRNES, M.D.
Boston

Primary cancers of the liver, extrahepatic bile ducts and pancreas comprise an important group of human neoplasms totalling between 5 and 10 per cent of all carcinomas. The hopeless prognosis of malignant growths in these areas may in part be explained by our clinical inability to recognize these cases at a sufficiently early stage for successful surgical therapy. Amelioration of cancer mortality from these tumors in large measure rests with the family physician and internist, who at present fail to diagnose the disease in two thirds to four fifths of these patients antemortem.[1]

With the recent revival of interest in cytologic diagnosis of cancer, it seemed possible that the technic of staining exfoliated epithelial cells in duodenal aspirations might contribute information that would be of assistance in the recognition of neoplasms arising from the epithelial surfaces of the exocrine portion of the pancreas, the extrahepatic and intrahepatic radicles of the biliary tract, the gallbladder and possibly in the liver itself. It was surprising that none of the prior students of duodenal secretion, such as Bockus [2] and Lyon,[3] had made any observations on the presence of neoplastic epithelial cells in biliary drainages, although the latter reported finding cancer cells in the gastric juice as far back as 1923. The fact that smears of exfoliated cells offer the only laboratory test short of biopsy which may indicate the presence of localized early cancer, so-called "carcinoma in situ," was most encouraging to our endeavor,[4] as was the simplicity and wide applicability of the method of duodenal drainage in clinical practice.

METHOD

The patients chosen for study included chiefly those with jaundice of obscure causation observed on the wards of the Massachusetts Memorial and Boston City hospitals during the past two years. Observations made in cancer patients have been controlled by similar tests of a much larger series of patients with inflammatory disease of the liver, biliary tract and pancreas and by careful cytologic comparison of positive smears with corresponding pathologic sections of the tumor itself. In three quarters of the cases of cancer the diagnosis has been verified pathologically, as it has in over one third of the controls; the remainder of the patients have been followed for three to eighteen months, or until death, in order to be reasonably sure of the clinical diagnosis.

Read before the American Society for Clinical Investigation, Atlantic City, New Jersey, May 2, 1949.

This investigation has been supported in part by a teaching grant from the United States Public Health Service.

From the Department of Medicine, Boston University School of Medicine, the Evans Memorial and Massachusetts Memorial Hospitals, and the Fifth and Sixth (Boston University) Medical Services, Boston City Hospital.

1. Willis, R. A.: Pathology of Tumours, St. Louis, C. V. Mosby Company, 1948, p. 71.

2. Bockus, H. L., and others: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3, chap. 98.

3. Lyon, B. B. V.: Non-Surgical Drainage of the Gall Tract, Philadelphia, Lea & Febiger, 1923.

4. Pund, E. R.; Neiburgs, H. E.; Mettles, J. B., and Caldwell, J. D.: Pre-Invasive Carcinoma of the Cervix Uteri: Seven Cases in Which It Was Detected by Examination of Routine Endocervical Smears, Arch. Path. **44**: 571-577 (Dec.) 1947.

The method of obtaining duodenal contents follows widely accepted methods of duodenal intubation, using either a Levin or a Rehfuss tube. The flow of bile and pancreatic juice has in many cases been stimulated with administration of a 33.3 per cent solution of magnesium sulfate, secretin or methacholine chloride, but this is not imperative for success. The tube should not be lubricated with oil at any time. Fluoroscopy has been used in most instances to determine the location of the tip of the tube. Specimens of fasting gastric juice and A, B and C bile are separately collected in receptacles chilled in an ice bath. The fluid is promptly neutralized to p_H 7 and centrifuged at 1,800 revolutions per minute for ten minutes. The sediment from specimens containing as little as 2 to 3 cc. of secretion may be used for making smears on a similar number of slides, although usually one to three slides are made from every 15 cc. of fluid obtained. The smears of the sediment are then fixed while moist for at least one-half hour in chilled acetone, after which they are dipped twice in a 1 per cent solution of celloidin in acetone, allowed to drain ten to fifteen seconds in air and then are transferred to 95 per cent alcohol. This celloidin jacket is necessary to insure good adhesion of the smeared cells to the slides during the staining process, which is carried out using the method described by Papanicolaou.[5]

RESULTS

Normally, the duodenal sediment contains few cells and little mucus. Inflammatory disease or calculi in the biliary tract are indicated by the presence of pus cells, macrophages, segments of normal columnar epithelium[6] and abnormal crystals or pigments. Cholesterol and calcium bilirubinate crystals may at times be preserved in the stained smears. In the majority of our specimens from cancer patients, groups of neoplastic cells were recovered, usually in company with normal columnar epithelial cells, permitting careful and accurate comparison of the two types of cells. The malignant cells for the most part closely resembled the type B cells described by Caspersson as characteristic of many cancers and absent in normal tissues.[7] These cells were not arranged like normal columnar cells in pavement mosaics a single cell layer in thickness (fig. 1). Their nuclei varied widely from cell to cell in size, shape and staining properties and usually were considerably increased in size, with a relative increase in the ratio of nucleus to cytoplasm. Large nucleoli were frequently present, along with wrinkling of the nuclear membrane. The cytoplasm was unusually basophilic in most instances, and it displayed characteristic vacuolization in some cases; in others there was phagocytosis of adjacent malignant cells. As a rule, mitotic figures were not seen (fig. 2). Although we have not been able to ascertain the origin or type of the tumor from the appearance of these cells, thus far their morphologic counterpart has been present in the biopsy or autopsy sections of the cancer in every case in which comparison has been possible (fig. 3). The prevalence of two distinct epithelial cell types, one normal and one abnormal, in every slide from a case, has proved to be our most reliable guide in cytodiagnosis of neoplastic disease (fig. 2).

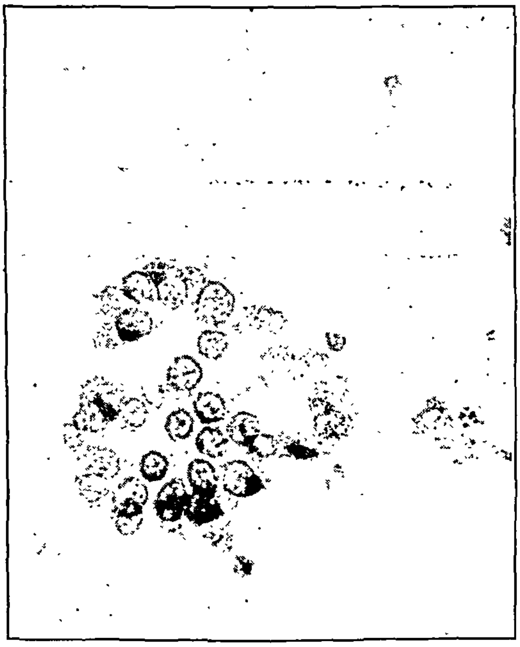

Fig. 1.—Normal low columnar epithelial cells found in profusion in the duodenal sediment from patient with advanced Laennec's cirrhosis (biopsy) and acute hemorrhagic pancreatitis (autopsy). The smear was interpreted as showing inflammatory disease only (× 700).

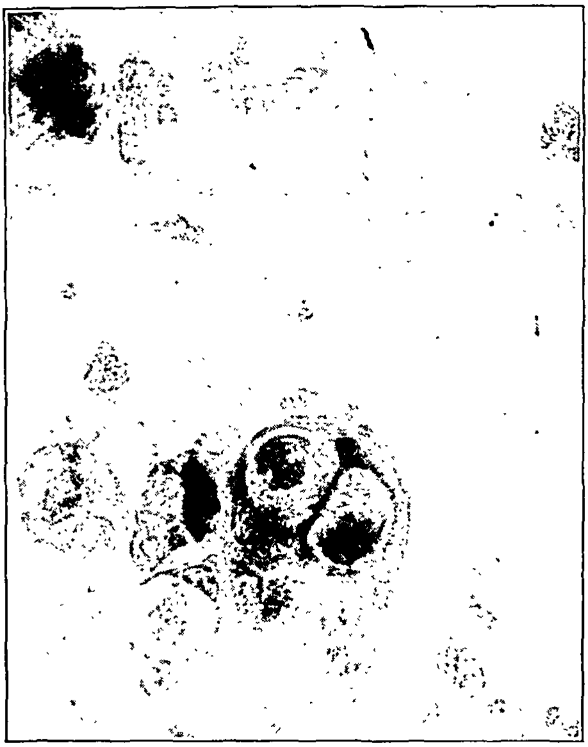

Fig. 2.—One of many clumps of neoplastic cells surrounded by tall columnar normal epithelial cells, found in duodenal sediment of patient with carcinoma of head of pancreas, pathologically reported as resembling hepatoma (× 800).

Data on 58 patients, including 20 with cancer in various portions of the liver, biliary tract and pancreas, have now been analyzed. Less than 5 per cent of all duodenal drainages have been found to be inadequate for diagnosis, or unsatisfactory for other technical reasons, with the foregoing procedure. Hence, in most cases only a single drainage has been necessary. This has been true even when it was not possible to obtain the various fractions of bile separately, when there was complete biliary obstruction by tumor and in several cases when the surface area from which exfoliation of tumor cells occurred was less than 2.5 cm. in diameter. The accuracy of diagnosis of cancer from cytologic examination of duodenal sediment is illustrated in figures 4 and 5. No false positive observations have been made, and in the majority of cancer diagnoses an affirmative rather than a questionable diagnosis has been possible. Nearly all smears were examined in the complete absence of any clinical information concerning the patient, and reports were made prior to any further inquiry.

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[5] Papanicolaou, G. N.: New Procedure for Staining Vaginal Smears. Science **95**: 438-439, 1942.

[6] Bockus and others.[2] Lyon.[3]

[7] Caspersson, T., and Santesson, L.: Studies on Protein Metabolism in the Cells of Epithelial Tumours, Acta radiol., 1942, supp. 46.

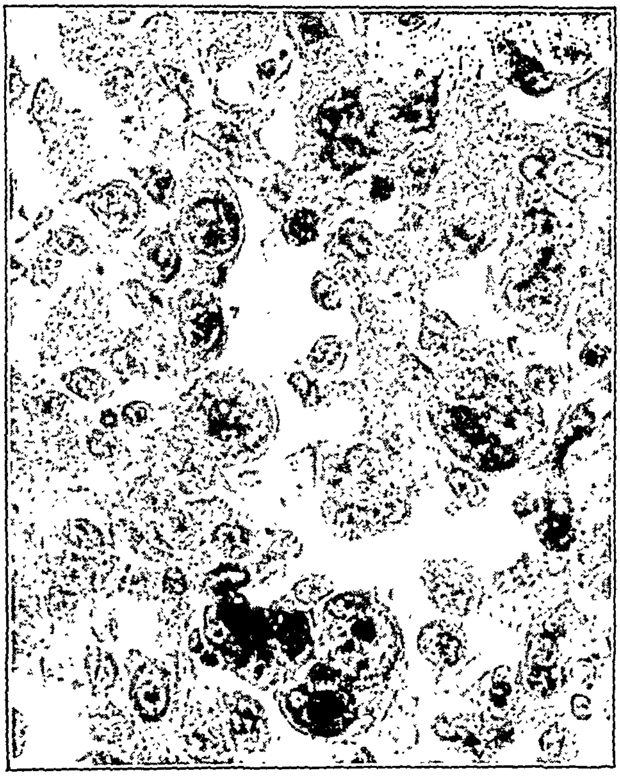

Fig. 3 (same case as fig. 2).—Typical section of biopsy of cancer of the head of the pancreas, showing similarity in appearance of cells proliferating within the tumor to those exfoliating into duodenal secretion (× 800).

In 16 cases of cancer proved pathologically in this series, the disease in 11 was suspected or diagnosed from cytology of the duodenal aspirations. These cases have included two hepatomas, one adenocarcinoma of the gallbladder, one carcinoma of the common bile duct, one carcinoma of the ampulla of Vater, three carcinomas of the head of the pancreas, one carcinoma of the body and tail of the pancreas, and one case of carcinoma metastatic to the liver and pancreas. Both hepatomas which yielded positive smears had metastasized, one within the common bile duct and the other to the head of the pancreas. The eleventh cancer diagnosed was in a person being treated for infectious hepatitis and duodenal ulcer (shown by roentgenogram); he was studied as a control, and it was found that the tube could not be passed into the duodenum. Smears of the gastric juice revealed neoplastic cells originating from what later was found to be a huge, ulcerating, obstructing cancer, involving the lower half of the stomach and most of the pancreas.

The missed cases in which pathologic proof of cancer existed included one hepatoma without metastases to the area of the porta hepatis, one carcinoma of the body of the pancreas and two carcinomas metastatic in the liver, in one of which the primary lesion remained in the stomach. One carcinoma of the head of the pancreas was missed because of a wholly unsatisfactory smear, which contained no cells of any sort; most of the sediment apparently washed off the slide during staining, probably as a result of contamination with oil. There were 2 additional cases with clinical diagnosis of cancer of the biliary tract, without pathologic verification, in which suspicious or positive smears were obtained. Both these patients died within six months of observation with a progressive clinical picture consistent with their discharge diagnosis of cancer of the biliary tract. Of 9 proved cancers, primary in epithelial surfaces of the extraheaptic biliary tract or pancreas, 7 had been indicated by the smears.

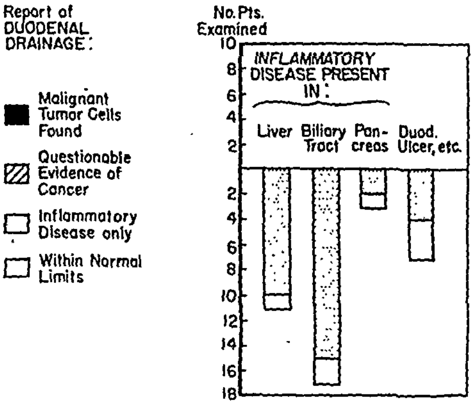

Fig. 4.—Accuracy of interpretation of duodenal cytology in 38 control patients with nonmalignant disease.

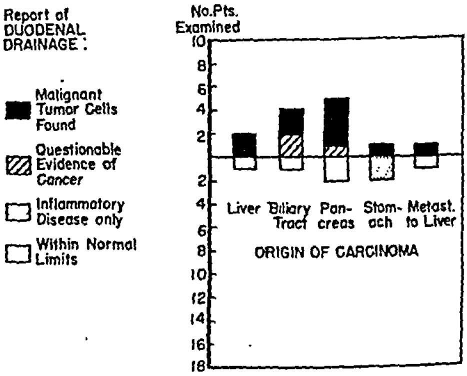

Fig. 5.—Accuracy of interpretation of duodenal cytology in 20 patients with cancer.

In one quarter of the control cases there was a strong clinical impression of cancer, at the time of duodenal intubation, that was not borne out either by smears or by the subsequent course of the patient. In most of these, the smears gave good evidence of calculi or inflammatory disease. One patient obtained relief of her symptoms seven months later by passing a large gallstone per anus, and others were shown to have inflammatory lesions by operation, liver biopsy or autopsy. The smallest cancer detected was a papillary adenocarcinoma of the common bile duct 2 cm. in diameter, which, unfortunately, was inoperable because of local peritoneal recurrence of an earlier primary tumor of the colon. All patients with positive smears in this series of hospitalized cases died of their disease within six months, emphasizing the need of applying this method of diagnosis to those whose disease is in earlier stages. Examination of these smears has been sufficiently easy to enable second year medical students to identify malignant cells after two hours of instruction.

Our study, therefore, indicates that the clinical value of this test will depend on the extent to which it is utilized as a diagnostic office procedure soon after onset of symptoms, rather than as a confirmatory measure of advanced and hopeless disease in hospitalized patients, to which our efforts so far have been limited. It must be remembered that up to 75 per cent of patients with cancers of the biliary tract and pancreas have early symptoms of upper abdominal pain for which they seek medical care.[8] Since this test is as yet the only method of obtaining histologic proof of these tumors short of exploratory laparotomy, it would seem reasonable that the indications for duodenal drainage be broadened to include all patients for whom an upper gastrointestinal roentgen ray study is recommended and in whom the diagnosis has not been settled by the roentgenologic procedure. In addition, since the procedure is fraught with little hazard or discomfort, it should be carried out on every jaundiced patient within the first forty-eight hours of disease. Bleeding esophageal varices and acute cholecystitis appear to be the chief contraindications. Smears should be made of the sediment of all biliary drainages and stained by Papanicolaou's method, because routine observation of the cytology of duodenal contents would appear from the results of our study to contribute considerably to the value of this widely used diagnostic aid. This method appears to be sufficiently sensitive for detection of many early carcinomas in this as in other regions of the body.

CONCLUSION

Cytologic examination of the sediments of duodenal aspiration appears to be a valuable indication of tumors primary in the glandular epithelium of gallbladder, extrahepatic bile ducts and pancreas. Examination of exfoliated epithelial cells should become a routine procedure on all duodenal drainages. Cytologic examination of duodenal secretion provides the most hopeful technic yet described for early detection of this group of otherwise obscure and inaccessible malignant tumors, which account annually for at least 10,000 deaths in the United States.

ADDENDUM

Two additional cases in which pancreatic carcinoma was diagnosed preoperatively by exfoliated cancer cells in duodenal drainage have recently been reported from Memorial Hospital, New York, by McNeer and Ewing.[9]

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[8] Ingelfinger, F. J.: The Diagnosis of Cancer of the Pancreas, New England J. Med. **235**: 653-661, 1946. Kirshbaum, J. D., and Kozoll, D. D.: Carcinoma of the Gallbladder and Extra-Hepatic Bile Ducts: A Clinical and Pathological Study of One Hundred and Seventeen Cases in 13,330 Necropsies, Surg., Gynec. & Obst. **73**: 740-754, 1941.

[9] McNeer, G., and Ewing, J. H.: Exfoliated Pancreatic Cancer Cells in Duodenal Drainage: A Case Report, Cancer **2**: 643-645 (July) 1949.

VITAMIN B_{12} AND COORDINATION EXERCISES FOR COMBINED DEGENERATION OF THE SPINAL CORD IN PERNICIOUS ANEMIA

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Pernicious anemia, first described by Combe[1] in 1824, was not recognized as a clinical entity until Addison's reports[2] appeared in 1849 and 1855. It invariably terminated fatally until the epochal discovery of Minot and Murphy[3] in 1926 that the oral administration of liver was effective in controlling the anemia and certain other clinical manifestations of the disease. Neurologic manifestations, however, were not well controlled by oral therapy. Later, extracts of liver were introduced which could be administered parenterally. These yielded far better clinical and hemopoietic responses. Progression of neurologic manifestations was prevented, and in cases in which neurologic involvement was of recent onset improvement frequently occurred.

Search for the active factor or factors in liver that possessed anti-pernicious-anemia properties resulted in the discoveries of folic acid in 1945 and of vitamin B_{12} in 1948. While folic acid elicited hemopoietic responses in patients with pernicious anemia in relapse, it did not prevent neurologic manifestations from developing. Studies with vitamin B_{12}, on the other hand, have shown that this substance not only induces optimal hemopoietic responses but also controls the gastrointestinal and neurologic manifestations of the disease.

TECHNIC FOR ADMINISTERING VITAMIN B_{12}

Vitamin B_{12} is a red crystalline compound that contains cobalt, an important trace element in human nutrition. It is administered parenterally in saline solution[4] and is active in microgram quantities, 1.0 microgram being approximately the equivalent of 1.0 U. S. P. unit of liver extract. When given by mouth, vitamin B_{12} is not absorbed readily unless a gastric (intrinsic) factor is supplied also.[5] In treatment of patients with pernicious anemia and peripheral neuritis or subacute combined degeneration of the spinal cord, large doses of vitamin B_{12} should be administered parenterally. Ten micrograms should be injected intramuscularly daily or every second day for three to six months; then maintenance doses of 10 to 20 micrograms should be employed each

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From the Division of Medicine (Dr. Hall), the Section on Physical Medicine (Dr. Krusen) and the Department of Neurology and Psychiatry (Dr. Woltman), Mayo Clinic.

Read before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

[1] Combe, J. S.: Case Report, Tr. Med.-Chir. Soc. Edinburgh **1**: 194-204, 1824.

[2] Addison, T.: Anaemia: Disease of the Supra-Renal Capsules, London M. Gaz. **43**: 517-518, 1849; On the Constitutional and Local Effects of Disease of the Supra-Renal Capsules, London, S. Highley, 1855.

[3] Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 470-476 (Aug. 14) 1926.

[4] Berk, L.; Denny-Brown, D.; Finland, M., and Castle, W. B.: Effectiveness of Vitamin B_{12} in Combined System Disease; Rapid Regression of Neurologic Manifestations and Absence of Allergic Reactions in a Patient Sensitive to Injectable Liver Extracts, New England J. Med. **239**: 328-330 (Aug. 26) 1948. Hall, B. E., and Campbell, D. C.: Vitamin B_{12} Therapy in Pernicious Anemia: I. Effect on Hematopoietic System; Preliminary Report, Proc. Staff Meet., Mayo Clinic. **23**: 584-590 (Dec. 8) 1948.

[5] Berk, L.; Castle, W. B.; Welch, A. D.; Heinle, R. W.; Anker, R., and Epstein, M.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia: X. Activity of Vitamin B_{12} as Food (Extrinsic) Factor, New England J. Med. **239**: 911-913 (Dec. 9) 1948. Hall, B. E.; Morgan, E. H., and Campbell, D. C.: Oral Administration of Vitamin B_{12} in Pernicious Anemia: I. Presence of Intrinsic Factor in Berkefeld-filtered Pooled Human Gastric Juice: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 99-107 (Feb. 16) 1949.

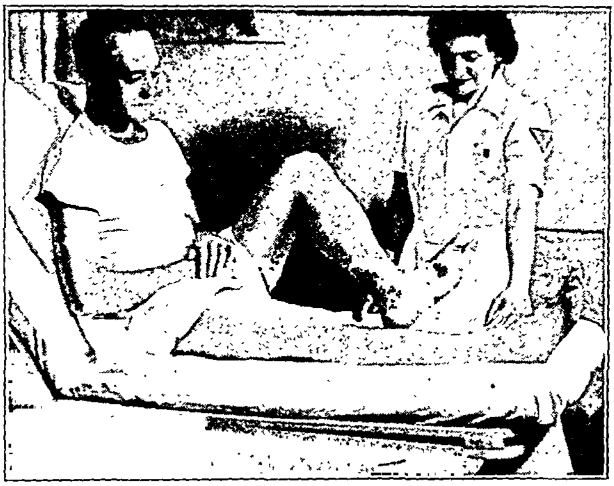
week. These doses are in excess of those needed by patients who have pernicious anemia without involvement of the nervous system, but it is perhaps better to err on the side of large dosage in these cases. It is possible that doses even larger than those we have mentioned will prove to be more effective.

COORDINATION EXERCISES

Coordination exercises for combined degeneration of the spinal cord are not new. William P. Murphy presented motion pictures of exercises, somewhat similar to the ones which we employ, before a session of the American Medical Association over a decade ago.

Properly directed coordination exercises serve as an important motivating force in hastening recovery and rehabilitating patients who may have been disabled for some time. More than this, the exercises actually assist coordination and restore strength of muscles which may not have functioned properly since the neurodegenerative changes of pernicious anemia first manifested themselves.

In order to satisfy ourselves concerning the effect of the coordination exercises alone, in 1 patient we withheld the vitamin B_{12} therapy for ten days and used the exercises only. There was distinct evidence of improved coordination, even though we knew that there had been no arrest or reversal of the neurodegenerative changes. When vitamin B_{12} was finally added to the therapeutic regimen, the patient, as we expected, made even more rapid progress. Nevertheless, we had satisfied ourselves that the exercises of themselves contributed toward the improvement we noted in all cases.



One of the early coordination exercises for subacute combined degeneration of the spinal cord. The heel is placed at various points on the opposite leg.

The simple arrest or reversal of the neurodegenerative changes by the administration of vitamin B_{12} without the use of a well directed exercise program will not accomplish return toward normal coordination and function of the extremities as rapidly as when the exercises are added. This is particularly true in the cases of more advanced changes in which there is both incoordination and muscular weakness.

The exercises which we employ are carefully graduated. They start with the patient in the recumbent position, become gradually more complex and progress to exercises given in the sitting and finally in the erect position.

The exercises, given with the patient recumbent, start with slow rhythmic sliding movements of one leg and then both legs in flexion and extension. As the patient improves, these motions are started and stopped at command. Later the heel is lifted and, instead of sliding, the leg is balanced and moved in free space. Next, first one heel and then the other is placed in various positions on the opposite leg (the figure).

The coordination exercises gradually are made increasingly complex. Abduction and adduction are added. Exercises requiring maximal coordination with minimal muscular contraction are given. The patient is required to study the tactile impressions produced by certain movements. Movements of both limbs together are followed by alternate movements of the legs. Finally the patient attempts to follow someone's finger or cupped hand with his heel.

All exercises are prescribed specifically. Each one is repeated no more than four times every three hours. These patients tend to lose the sense of fatigue, and consequently it is important to prevent them from overexercising.

Later, patients are given exercises while in the sitting position and are taught how to sit down and how to get up from a chair. Unless corrected, such patients tend simply to let themselves fall into the chair. On rising, they may not be able to balance on the toes; therefore the body must be bent forward to throw the center of gravity over the heels.

Still later, walking exercises are begun, first sideways (because this is easier) and then forward, at first with a cane and later without one. The patient tends at first to walk too fast, and this tendency must be corrected.

If the patient has had considerable weakness of the muscles, we sometimes add resistive exercises utilizing sandbags or graduated weights, to increase muscular strength. These heavy resistance exercises are especially useful in producing muscular hypertrophy. We recall 1 patient, a farmer, who was given liver therapy and coordination exercises after prolonged disability and a long period of chair existence. He had vegetated for so long that he was extremely weak. It seemed advisable, therefore, to add strengthening exercises. After a program of both coordination and heavy resistance exercises in conjunction with the liver therapy, he now walks all over his farm, and his family's chief complaint is that he is too active.

Despite Murphy's advocacy of therapeutic exercise in conjunction with liver therapy, recently some physicians seem to have overlooked this valuable aid to prompt recovery following the administration of agents which produce adequate hemopoietic responses in combined degeneration of the spinal cord in pernicious anemia.

It seems evident that vitamin B_{12} produces optimal hemopoietic response and maximal arrest or reversal of neurodegenerative changes in pernicious anemia. When a suitable regimen of therapeutic exercises is added, disappearance of muscular incoordination and return toward normal muscular function are accelerated. Thus, maximal recovery in a minimal length of time is achieved.

NEUROLOGIC CHANGES

Lichtheim[6] first sensed the accepted relation between pernicious anemia and neurodegenerative changes. One of us (H. W. W.)[7] reported before 1926 that of 100 patients with pernicious anemia 80.6 per cent had neuropathy. Evolving foci are seen best in the brain, where they appear around blood vessels. Both myelin sheath and axon suffer. Fusion of plaques and secondary degeneration rapidly produce the characteristic myelopathy. As shown by Hamilton and Nixon,[8] peripheral nerves do not escape.

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[6] Lichtheim: Zur Kenntniss der periciösen Anämie, Verhandl. d. deutsch. Kong. f. inn. Med. 6: 84-96, 1887.

[7] Woltman, H. W.: The Nervous Symptoms in Pernicious Anemia: an Analysis of One Hundred and Fifty Cases, Am. J. M. Sc. 157: 400-409 (March) 1919.

Before treatment with liver was begun, the earliest neurologic symptom mentioned by 80 per cent of patients with pernicious anemia was persistent paresthesia, beginning in the hands and feet. An ataxic gait occurred in 20.8 per cent of cases. The gait was spastic in 8 per cent, but usually spasticity was combined with ataxia. Incoordination in movements of the lower extremities was demonstrated by the heel-knee-toe test in 55.2 per cent of cases.

The most characteristic finding on examination was dissociated impairment of vibratory sensibility, which was present in 82.4 per cent of cases of pernicious anemia before liver therapy was available. The quadriceps reflex was increased in 39.2 per cent and was absent in 7.2 per cent. The triceps surae reflexes, like the quadriceps reflexes, may be increased, diminished, absent or unequal. Ankle clonus was present in 4.8 per cent of cases. Babinski's sign was positive in 26.4 per cent. Mild mental changes occurred in 35.2 per cent; severe psychosis, in 0.8 per cent.

Subacute Combined Degeneration of Spinal Cord in Pernicious Anemia: 12 Patients Treated with Vitamin B_{12}

Neurologic Manifestation	Incidence Before Treatment, No. of Patients	Return Essentially to Normal		Improvement		No Improvement	
		No. of Patients	Period of Treatment, Months	No. of Patients	Period of Treatment, Months	No. of Patients	Period of Treatment, Months
Paresthesia							
Upper limbs	9	5	1 to 3	4	1 to 5½	0	..
Lower limbs	12	2	3½ to 5	10	3 wk. to 7	0	..
Ataxia	11	9	1 to 5½	2	1 to 4½	0	..
Romberg's sign	10	6	1 to 7	4	1 to 4½	0	..
Vibration sense, lower limbs	12	1	9	7	1 to 7	4	1 to 7
Position sense, toes	10	4	1 to 9	3	1½ to 4½	1	1
Heel-knee-toe test	11	8	3 wk. to 3½ mo.	3	1 to 4½	0	..
Quadriceps femoris reflex	12	2	1½ to 9	4	1 to 5½	6	1 to 9
Triceps surae reflex	11	2	1 to 9	2	4½ to 5½	7	1 to 7
Babinski's reflex	5	4	3 wk. to 9 mo.	1	1	0	..
Clonus	1	1	8 days	0	....	0	..

These findings indicate extensive involvement of the nervous system. If treatment is begun early, the changes in the nervous system are reversible; but after axis-cylinders within the brain or spinal cord have been destroyed, their function cannot be restored. Hence, energetic treatment with liver extract or vitamin B_{12} should be started without delay.

RESULTS

Twelve patients having subacute combined degeneration of the spinal cord associated with pernicious anemia were given combined parenteral administration of vitamin B_{12} and coordination exercises. The incidence of paresthesia of the upper or lower limbs, ataxia, Romberg's sign, vibration sense of lower limbs and position sense of toes was observed before and during treatment (the table).

Paresthesia of the upper limbs was present in 9 of the 12 patients. In 5, essentially normal conditions returned in one to three months. The other 4 showed improvement in one to five and a half months. None was unimproved.

Paresthesia of the lower limbs was present in all 12 patients. The condition of 2 of these returned essentially to normal in three and a half to five months of the treatment. The other 10 were improved in three weeks to seven months. None was unimproved.

Ataxia was present in 11 patients. In 9 of these, essentially normal conditions returned in one to five and a half months. Two were improved in one to four and a half months. None was unimproved.

Romberg's sign was positive in 10 of our patients. Six showed return essentially to normal in one to seven months. Four were improved in one to four and a half months. None was unimproved.

Vibration sense of lower limbs was impaired in all 12 patients. One showed return essentially to normal in nine months. Seven were improved in one to seven months. Four were unimproved after one to seven months of treatment.

Position sense of the toes was impaired in 10 cases. Four of these showed return essentially to normal in one to nine months. Three were improved in one and a half to four and a half months. One was unimproved after one month.

The heel-knee-toe test and tests of quadriceps femoris reflex, triceps surae reflex and Babinski's reflex and for ankle clonus were performed in all 12 cases (the table). Eleven of the 12 patients performed the heel-knee-toe test poorly before treatment. Eight exhibited a return to essentially normal conditions in three weeks to three and a half months of treatment. Three were improved in one to four and a half months. None was unimproved.

The quadriceps femoris reflex was abnormal in all 12 patients. In 2 patients it returned essentially to normal in one and a half to nine months. Four were improved in one to five and a half months, but 6 showed no improvement after one to nine months.

The triceps surae reflex was abnormal in 11 patients. In 2 of these it returned essentially to normal in one to nine months of treatment. In 2 it was improved in four and a half to five and a half months. In 7, however, no improvement occurred in one to seven months. It is apparent that these muscular reflexes are the least reversible, but in each instance 2 patients exhibited return essentially to normal.

The Babinski reflex was positive in 5 of the patients. It returned essentially to normal in 4 of these within three weeks to nine months of treatment. One patient was improved after one month of treatment. None was unimproved.

Clonus was present in 1 patient but disappeared after eight days of treatment.

COMMENT

Our study indicates that subacute combined degeneration of the spinal cord associated with pernicious anemia is reversible if intensive treatment is instituted early, before axis-cylinders have been destroyed. Early diagnosis, therefore, is essential. Treatment consists in parenteral administration of liver extracts or vitamin B_{12} and daily use of coordination exercises. Prompt, energetic and unremitting treatment is imperative.

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[8] Hamilton, A. S., and Nixon, C. E.: Sensory Changes in the Subacute Combined Degeneration of Pernicious Anemia, Arch. Neurol. & Psychiat. 6: 1-31 (July) 1921.

ABSTRACT OF DISCUSSION

DR. BYRON E. HALL, Rochester, Minn.: My co-workers and I feel that vitamin B_{12} in all probability is the active substance in liver extract. Moreover, its action on the regeneration of the nerve fiber seems to be fairly specific. Therefore, it should not be necessary to supplement the administration of vitamin B_{12} with liver extract. It is possible that other factors, at present unknown, are important in the regeneration of nerve fibers. In our movie we have attempted to show that decided improvement in the neurologic manifestations of pernicious anemia occurs after intensive treatment with vitamin B_{12} alone, provided the diagnosis is made before the neurodegenerative changes are far advanced and treatment is instituted promptly.

DR. GUSTA DAVIDSOHN, Chicago: I know of a patient, a woman about 80 years old, who has pernicious anemia, and she has combined degeneration. She was given vitamin B_{12} without liver. Within two weeks she had paresthesia again and burning sensation of the tongue. Dr. Krusen, you spoke of vitamin B_{12} or liver, from which I infer that if you give a patient vitamin B_{12} you refrain from giving liver extract.

DR. FRANK H. KRUSEN: That is correct.

USE OF HISTAMINE IN A RETARDING MENSTRUUM IN PERIPHERAL VASCULAR DISEASE

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and
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Brooklyn

Wirtschafter and Widmann[1] reported the parenteral use of histidine, sodium ascorbate and ascorbic acid in the treatment of peripheral vascular diseases. They stressed the rapidity of action of this medication in relief of pain in thromboangiitis obliterans, arteriosclerosis obliterans, and diabetic gangrene of the extremities. The effective agent was histamine, which was formed in vivo by the decarboxylation of histidine. In order to obviate the necessity of repeated injections of these substances, we decided to employ histamine in a retarding menstruum. When histamine is injected in man, it acts as a vasodilator of the capillaries and arterioles.

The preparation of the menstruum was essentially that advocated by Code and Varco,[2] with slight modifications. Our best and most widely used mixture contains 3 per cent yellow wax in sesame oil.[3] Each cubic centimeter of menstruum contains 0.5 mg. of histamine base, as the diphosphate. The effect of retarded absorption of histamine from this mixture is well illustrated in guinea pigs. If 0.25 mg. of aqueous histamine base, as the diphosphate, is injected into a guinea pig the animal may succumb within an hour. An equal amount of histamine in the sesame oil–beeswax base delays the appearance of symptoms for seven hours. Similar results were obtained in 6 other animals when the concentration of histamine base was 0.125 mg. per cubic centimeter. A total of 10 guinea pigs were used with a consistent picture of delayed and minimal reaction with the sesame oil–beeswax mixture as compared to water menstruum. Care must be used to employ a dry syringe and needle, because water will wash out the histamine from the retarding menstruum.

The effective therapeutic results obtained with histamine in peripheral vascular diseases was emphasized by Mufson, Quimby and Smith.[4] They claimed that the intra-arterial route of administration is most preferable because of the rapidity with which the drug is inactivated by body enzymes when other routes are used.

METHOD OF STUDY

This report is concerned with a group of 93 patients with peripheral vascular disorders. Some have been under our observation for twenty-six months or more. Thermometric and oscillometric readings were obtained before and during therapy in nearly all cases. Relevant laboratory examinations and a careful history regarding the patient's current capacity to walk and carry on his everyday activities, as well as the routine physical examinations, were done in all cases.

In 32 cases paravertebral block (10 cc. of 1 per cent solution procaine hydrochloride at each level) was performed prior to the histamine injections. The responses to both procedures were used in comparing the rise and duration of skin temperature. A period of ten to fifteen days elapsed between comparative tests.

Fractional gastric analyses were completed for 19 patients at various intervals during the course of therapy. We were interested in determining any possible harmful effects that might arise from a constant stimulation of secretion of hydrochloric acid by the gastric mucosa.

TYPES OF CASES AND TREATMENT

Except in cases of bronchial asthma, cardiac asthma and other pulmonary complications, histamine in the retarding menstruum was used freely. Patients were given 1 cc. of the drug daily, and frequently 2 cc. a day. Hypertension, food allergies and some minor dermopathies were no contraindication to the use of the drug. However, a dry syringe and 22 gage needle were used. A moist syringe or needle destroys the prolonged absorption of the drug.

In table 1 are shown the types of cases that came under observation during this period of study.

Thromboangiitis Obliterans.—Of the 13 cases studied, 7 patients with thromboangiitis obliterans had involvement of both limbs and 6 of only one limb. No metabolic disorders were observed in this group. Ten of the 13 patients had moderate hypertension. In this group, 2 had a history of precordial pain, without electrocardiographic changes. Twelve of the 13 subjects are still tobacco consumers.

After the diagnosis was established, 1 cc. of histamine in the retarding menstruum was injected into the patient intragluteally each day. In 3 subjects, relief was obtained from intermittent claudication after the fourth day of therapy. The average course lasted twenty-two days, but some patients were maintained steadily on the histamine regimen for five weeks. All 13 had undergone treatment in various clinics, some for twenty years. In table 2 is given the result of therapy with histamine in thromboangiitis obliterans.

From Beth-El Hospital and Kings County Hospital, surgical service of Dr. George G. Dixon.

[1] Wirtschafter, Z. T., and Widmann, R.: The Elaboration of Histamine, J. A. M. A. **133**: 604 (March 1) 1947.

[2] Code, C. F., and Varco, R. L.: Prolonged Action of Histamine, Am. J. Physiol. **137**: 225 (Aug.) 1942.

[3] The sesame oil was furnished by Dr. H. L. Daiell of Lakeside Laboratories, Inc.

[4] Mufson, I.; Quimby, E. H., and Smith, B.: The Use of Radioactive Sodium As a Guide to the Efficacy of Drugs in the Treatment of Peripheral Vascular Diseases, Am. J. Med. **4**: 1 (Jan.) 1948.

In 9 cases of thromboangiitis obliterans in which the thermometric and oscillometric readings were indicative of moderate circulatory impairment, a comparison was made between the effects of histamine and paravertebral block on the elevation and duration of skin temperatures in the affected limb(s). Figure 1 indicates the results.

TABLE 1.—*Distribution of Cases*

Diagnosis	Number of Patients	Average Age	Weeks of Observation *	Sex
Thromboangiitis obliterans....	13	44	24.0	All males
Arteriosclerosis obliterans.....	30	64	27.5	26 males 4 females
Diabetes and arteriosclerosis obliterans	41	62	32.0	27 females 14 males
Miscellaneous	9	51	3.3	6 males 3 females

* Average of all cases.

Arteriosclerosis Obliterans.—In the group of 30 patients with arteriosclerosis obliterans, 12 were treated for as long as four months. A comparison of the histamine-retarding menstruum with paravertebral blocks showed a result similar to that seen in the thromboangiitis obliterans as far as elevation of skin temperature was concerned. In 5 male and 1 female patient the disease progressed to self amputation of the digits. In all, 8 subjects were observed with varying degrees of moist gangrene. The comparative rapidity with which the digits of 6 of these patients showed a line of demarcation, finally leaving a clean stump, was impressive. Approximately twenty-seven days was the average time for self amputation. In a group of 10 patients treated with tissue extracts and vasodilating drugs exclusive of histamine, the electric cradle and typhoid vaccine, the average time for self amputation was forty-one days. In 2 cases surgical amputation was performed. The degree of pain varied in all 30, but it was the commonest subjective complaint. Fourteen patients claimed relief after six days of therapy, but administration of the histamine in retarding menstruum was continued for nineteen days more. Six patients were completely refractory to the drug. Seven required amputation of the gangrenous organ, 3 died during the course of observation. No improvement was noted by oscillometry in any of the 30 patients during the course of therapy.

TABLE 2.—*Results of Treatment of Thromboangiitis Obliterans with Histamine in Retarding Menstruum*

Case	Duration of Symptoms, Years	Before		After		Conclusion
		Claudication	Ability to Walk 100 Yd.	Claudication	Ability to Walk 100 Yd.	
1	20	Severe	No	Mild	5-fold	Improved
2	4	Mild	Yes	Mild	Yes	No change
3	9	Mild	Yes	None	10-fold	Improved
4	7	Severe	No	Severe	No	No change
5	11	Mild	Yes	None	10-fold	Improved
6	3	Severe	Varied	Severe	Yes	Equivocal
7	5	Moderate	Yes	Mild	7-fold	Improved
8	7	Moderate	No	Moderate	No	No change
9	8	Severe	No	None	10-fold	Improved
10	4	Severe	No	Mild	5-fold	Improved
11	4	Mild	Yes	Mild	5-fold	Improved
12	9	Mild	Yes	Mild	Yes	No change
13	5	Severe	No	None	10-fold	Improved

A comparative study was made of the effect of paravertebral block versus histamine therapy on the temperature of the toes of 13 patients in this group. Figure 2 shows the prolonged and more decided effect of temperature elevation of the toes which resulted from administration of histamine in a retarding menstruum.

Table 4 shows that 14 patients with mild diabetes mellitus and arteriosclerosis obliterans obtained relief from claudication. Eleven were unaffected by the drug, and 4 were too disturbed mentally to give credence to their statements regarding response to therapy. Only transitory improvement by oscillometric determinations was observed in 2 cases, in which the improvement was not considered to be the result of histmaine therapy.

Uncontrolled Diabetes Mellitus and Arteriosclerosis Obliterans.—Twelve of the patients had uncontrolled diabetes mellitus and arteriosclerosis obliterans. Three were admitted to the hospital in diabetic coma. All recovered. Five had been hospitalized for spreading gangrene of the legs. All required amputation. No relief from pain was obtained with histamine therapy in any of the 5 before amputation. Four patients left the hospital before an adequate evaluation of the effects of histamine was obtained. The presence of uncontrolled, and difficult to control, diabetes made it hazardous to interpret the efficacy of histamine therapy in this group.

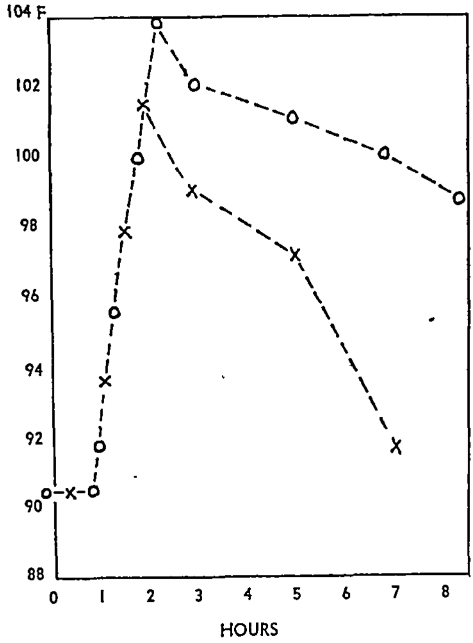

Fig. 1.—Average skin temperatures of toes in 9 patients with thromboangiitis obliterans. Line x. . . . x represents paravertebral block; o . . . . o represents administration of histamine in a retarding menstruum.

Miscellaneous.—1. Three patients with varicose ulcer were treated with histamine for an average of sixteen days. They had been treated for months without any improvement. Powdered blood had been used without any improvement. A combination of 1 cc. histamine in retarding menstruum daily plus powdered blood resulted in clinical improvement in 2 of the 3 cases. One patient was discharged on the eighteenth day after treatment with histamine and powdered blood was started, with a fine epithelized scar. The other was discharged on the thirteenth day after histamine and blood therapy was started. A delicate epithelium covered the lesion.

2. Four patients with arterial embolization, who later had amputations performed, were included in this group. Two died within three weeks after amputation.

Histamine had no effect on decreasing pain or hastening the appearance of the line of demarcation.

3. Two patients with traumatic lacerations and fractures of the legs were treated with histamine in addition to following the usual procedures involved in treatment of such injuries. No rapidity of healing, bony union or relief of pain was obtained that could be attributed to histamine therapy.

COMMENT

Proger[5] has stressed the importance of overcoming tissue anoxia in intermittent claudication. He has used cytochrome C, a naturally occurring enzyme, to overcome anoxia, with a good deal of success. The product is available commercially but is prohibitive in price.

It is our impression that the degree of success one can obtain with histamine depends on the amount of normal collateral vessel supply to the affected limb. If enough collateral circulation can be stimulated, then the role of the drug becomes exceedingly important. Histamine is a vasodilator of capillaries and arterioles in the higher animals and in man. Its side effects (a drop in blood pressure and gastric hyperacidity) are undesirable. However, when histamine is used in a retarding menstruum the characteristic flush and the decreased blood pressure are transitory manifestations.

TABLE 3.—*Arteriosclerosis Obliterans Treated with Histamine in Retarding Menstruum*

Number of Patients	Duration of Symptoms,* Years	Claudication	Average Duration of Treatment Days	Conclusions
19	1.5	19	26	Improved
11	1.7	11	33	Unimproved

* Average for group.

TABLE 4.—*Mild Diabetes Mellitus and Arteriosclerosis Obliterans Treated with Histamine in Retarding Menstruum*

Number of Patients	Duration of Symptoms, Years	Claudication	Average Duration of Treatment Days	Conclusions
14	2.0	14	22	Improved
11	2.5	11	27	Unimproved
4	2.5	4	26	Doubtful

Some of our patients complained of a "bitter taste" within four to six days after treatment was begun. This was overcome by their drinking about 4 ounces (15 cc.) of milk just before they received an injection of the drug. However, this was necessary in only 9 of the 93 cases studied.

Fourteen of the 19 subjects on whom fractional gastric analysis tests were made showed an absence of free hydrochloric acid when water was used as a stimulant. One cubic centimeter of histamine in retarding menstruum was injected intramuscularly. Gastric analysis on the following day showed the presence of normal amounts of free hydrochloric acid. Eleven patients were followed with repeated fractional gastric analyses, and a tendency was noted for the free hydrochloric acid values to remain around the upper limits of normal (50 to 60 units) as long as the patient continued to receive histamine therapy.

Code and Varco[2] produced gastric ulcers in dogs by maintaining a constant absorption of histamine from a yellow wax mixture that was injected into the animals. The doses used were many hundred times that used in this series. In no instance were we able to elicit a history of gastrointestinal disturbance in any of our patients during or after treatment with histamine in the retarding menstruum. Bernstein[6] reported over 30 cases of peptic ulcer in man successfully treated by repeated injections of histamine.

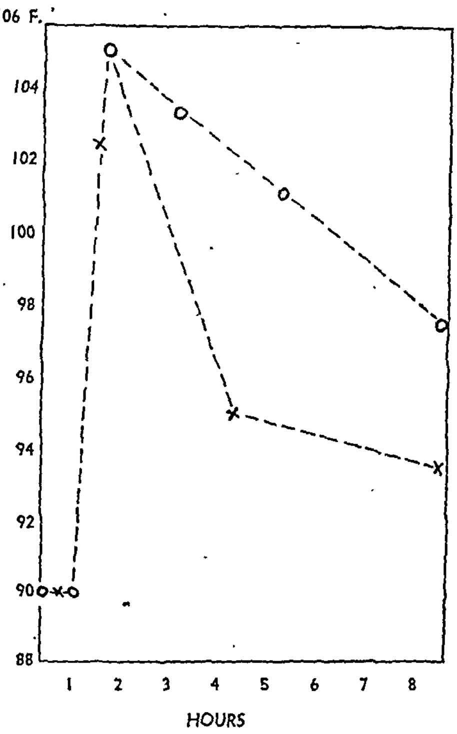

Fig. 2.—Average skin temperature of toes in 13 patients with arteriosclerosis obliterans; lines x....x and o....o as in figure 1.

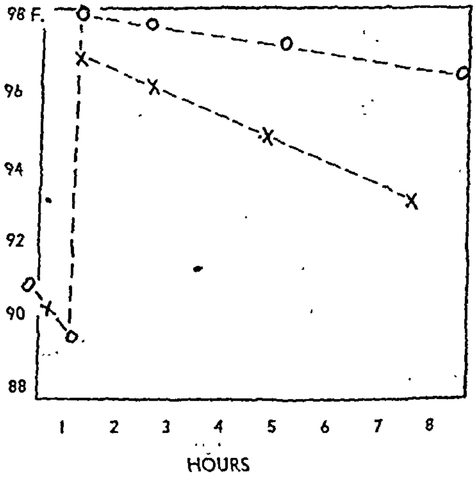

Fig. 3.—Average skin temperature of toes in 10 patients with diabetes mellitus and arteriosclerosis obliterans; lines x....x and o....o as in figure 1.

At the concentrations we used, no contraindications to the drug were encountered, even in coronary disease and hypertension. We have found that 0.5 mg. of the base in 1 cc. of menstruum is the proportion which gives the most consistent results, with a minimum of flush and headache. Intramuscular injection of 1 cc. a day is sufficient in most cases to secure a response.

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[5] Proger, S., and DeKaneas, D. J.: Clinical Use of Cytochrome C in Patients with Intermittent Claudication, Bull. New England M. Center 8:145 (Aug.) 1946.

[6] Bernstein, B. M.: Ann. Int. Med. 26:852 (June) 1947.

Indeed, we have given 1 mg. of histamine in 1 cc. of retarding menstruum in 22 cases that have not been reported in this series. Untoward effects were not observed. In another group, we gave 2 mg. of histamine base in 1 cc. of retarding menstruum without noting any disagreeable effects. These cases will be reported at a later date.

CONCLUSION

1. Histamine (as the diphosphate) in a retarding menstruum was used parenterally in 93 cases of peripheral vascular disease.

2. Forty-one of 72 patients with intermittent claudication manifested definite improvement. After the patients had received a course of histamine in retarding menstruum complete cessation of pain was observed in 13 instances.

3. A higher and more prolonged skin temperature of the lower extremities was observed in patients when results of treatment with histamine in retarding menstruum was compared with those of paravertebral block.

4. Histamine in a retarding menstruum may decrease the length of time for demarcation and self amputation of mortifying extremities

5. In the period of two years, we saw 32 patients returning periodically for additional therapy. The effect of the course of histamine therapy (about eighteen days) persists about three months.

6. Attention is directed to the necessity of using a dry syringe and needle when injecting the mixture, because the effects of histamine occur too rapidly and are dissipated in a watery medium.

Clinical Notes, Suggestions and New Instruments

PURPURA AND NEUTROPENIA IN TRIMETHADIONE THERAPY

Report of a Case with Recovery

NORMAN VAN WEZEL, M.D.
Foley, Ala.

Spielman, in 1944, was studying numerous chemicals for the purpose of devising a new analgesic. In so doing, he synthesized a drug, 3,5,5-trimethyloxazolidine-2,4-dione, which is now sold under the trade name of tridione.® He found that besides having analgesic power it was also anticonvulsive. It was immediately used by many physicians for the treatment of epilepsy. Clinically, they observed that it was useful primarily for the petit mal type of epilepsy, and not for the grand mal type. Since 1944 there have been many reports about its usefulness in this syndrome.

The purpose of this report is to present a case in which the drug was used, in which a serious complication developed, namely, agranulocytopenia, with exfoliative dermatitis and purpura. To date 3 such cases have been published. All 3 ended fatally, despite prompt and intensive therapy. The patient whose case I report survived.

Mrs. R. K. is a 54 year old white woman, whose chief complaints were pain in her chest, a choking sensation followed by chills, and some peculiar "spells." She described these as follows: A spell occurs each morning. She has a prodromal symptom, namely, a strange sensation in her stomach. She feels slightly nauseated and begins to choke. She feels as if she is unable to get air. Then she begins to shake. The shaking begins in the region of the jaw; then it involves the head, then the upper extremities, and finally the entire body. The spells last from one minute to two hours. The have occurred regularly over a period of two years. The onset of the spells began after she had undergone a rather sudden and severe shock—the home was struck by lightning. She herself sustained no injury. The attacks are much more prevalent during the summer time, and especially when there are storms, and they always occur in the morning. During these spells there is no loss of consciousness.

Her past history reveals nothing of significance except the shock caused by the experience of lightning. She had always been a healthy woman, vigorous, energetic, with no serious illnesses. She has one living child. The menopause was reached at the age of 52, without any adverse symptoms.

A complete physical examination revealed a woman, rather stout, who looked well and was not acutely or chronically ill. The physical findings were well within normal limits except that in the isthmus of the thyroid gland there was a soft cystic mass which measured 3 inches (7.5 cm.) in diameter and which, she said, had been there all her life. It had not changed in size. Her blood pressure was 140 systolic and 60 diastolic. A short diastolic murmur was heard at the mitral area. The only other physical finding of any significance was a retroverted uterus, with a small fibroid, all of which was freely movable. A complete investigation, including laboratory studies, added nothing to this. The blood leukocyte count was 10,000; the hemoglobin was 86 per cent; differential smears were all normal. The urine was free of albumin and sugar. She was first seen April 20, 1948, at which time a tentative diagnosis of petit mal type of epilepsy was made. A factor of conversion hysteria could not be excluded. She was referred to a psychiatrist for an electroencephalogram, and the report was that the findings were consistent with a convulsive disorder, but not typical of epilepsy. On July 12 treatment was started with 5 grains (0.32 Gm.) of trimethadione N.N.R. (tridione®), taken orally, three times a day. On July 19 the patient reported that she was better and that she had had no spells during the week while she was taking the drug. A recheck of her blood cell count and her general condition was done, without any unusual findings. On July 23 she reported that she had to stop taking the drug because it resulted in nausea and vomiting. This was eleven days after the treatment started. On July 26 she presented herself with an extensive outbreak of giant urticaria. On July 27 she had a fine macular eruption, which was generalized but more pronounced on the face and neck. At this time her blood leukocyte count was 4,050; the blood culture was negative; the blood smear showed 60 per cent polymorphonuclear leukocytes and 40 per cent lymphocytes, and a special culture for Meningococcus was negative. The erythrocytes were perfectly normal, as was the number of platelets.

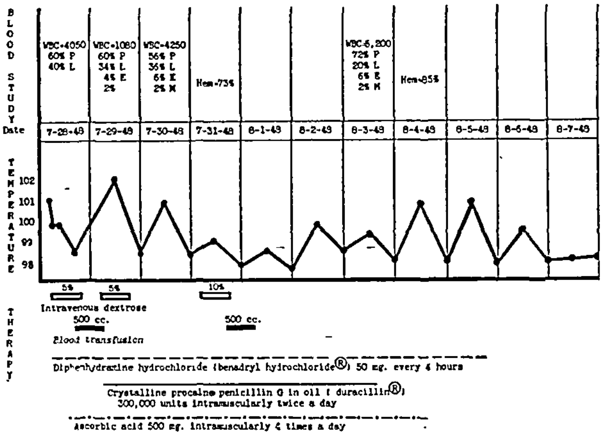


Chart showing the course of the leukocytes, the temperature and the therapy in a case of intoxication due to tridone,® taken by the patient for attacks of the petit mal type of epilepsy. Key to abbreviations: *WBC*, white blood cells; *P*, polymorphonuclears; *L*, lymphocytes; *E*, eosinophilic granulocytes; *M*, monocytes; *Hem.* hemoglobin.

On July 28 she was admitted to the hospital because of numerous purpuric spots appearing over the anterior surface of the chest, both arms and the legs. At this time the rash over the face and neck was beginning to exfoliate. While at the hospital she had blood transfusions, intravenous injections of fluids, penicillin therapy, menadione and ascorbic acid. All of this is shown graphically in the accompanying chart. Her temperature, as seen by the chart, reached rather high peaks. For three days she was critically ill, and her urine output was definitely diminished. Despite her appearance, however, at no time did she lose consciousness, and at no time during her stay at the hospital did she have any spells.

On August 8 she was discharged from the hospital, at which time most of the skin had exfoliated in large patches, with, in some instances, almost a cast formation of the forehead and neck, but her general condition was excellent. On November 17 she reported that she was well, her skin had completely cleared, her blood cell counts were well within normal limits, and she had had no more "spells."

COMMENT

Davis and Lennox reported that 13 per cent of patients who are treated with tridione® have neutropenia, in which there are 2,500 or less cells, but that these patients have no symptoms. Fifteen per cent of patients given this drug have a rash. This patient had both the neutropenia and the rash. There are other toxic symptoms that are due to the drug, which include (1) excessive sensitivity to light (glare phenomenon), (2) nausea, (3) drowsiness and (4) aplastic anemia.

This report is presented to serve as a record in the literature of one of the serious reactions to this drug, tridione.® It is also submitted to show the type of therapy used in order to assist this woman over a serious complication. Lastly, it is to serve as a record of recovery from this most serious complication of the use of tridione.®

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

Austin Smith, M.D., *Secretary.*

SULFATHIAZOLE AND SULFATHIAZOLE SODIUM OMITTED FROM N. N. R.; COMBINATIONS OF SULFATHIAZOLE OR SULFATHIAZOLE SODIUM WITH OTHER AGENTS UNACCEPTABLE FOR INCLUSION IN N. N. R.

The Council recently considered the present status of sulfathiazole. It considered the fact that approximately 18 per cent of patients who receive sulfathiazole experienced untoward reactions—fever, rash, acute leukemia, leukopenia and other manifestations of toxicity (which compares with about 16 per cent for sulfapyridine, 12 per cent for sulfanilamide, 6 per cent for sulfadiazine and 7 per cent for sulfamerazine). Further question of the need for continuing acceptance of sulfathiazole was raised in view of the fact that less toxic sulfonamide drugs, and penicillin and streptomycin, are now available. In conformance with its policy of withdrawing acceptance of a toxic drug when a less toxic but equally effective agent becomes available, the Council voted to omit sulfathiazole and sulfathiazole sodium from New and Nonofficial Remedies.

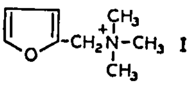
Further consideration of this subject was precipitated by the fact that there are at present marketed a number of sulfonamide mixtures containing sulfathiazole or sulfathiazole sodium. The Council decided that such mixtures involved risk of the danger which led it to omit the drug itself from N. N. R. The Council therefore declared mixtures of sulfathiazole or sulfathiazole sodium with other agents unacceptable for inclusion in N. N. R.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

FURTRETHONIUM IODIDE. — Furmethide Iodide —(Smith, Kline & French.)—Furfuryltrimethylammonium iodide.—$C_8H_{11}INO$.—M.W. 267.12.—The structural formula for furtrethonium iodide may be represented as follows:



Actions and Uses.—Furtrethonium iodide, an isopropylamine analogue of furane, exhibits parasympathomimetic (cholinergic) effects qualitatively similar to those of methacholine (acetyl-beta-methylcholine). It differs from the latter drug chiefly in that furtrethonium iodide is more effective when given orally; and by injection it is quantitatively less active on the cardiovascular, respiratory and gastrointestinal systems than methacholine. Furtrethonium iodide is thus considered to exert a greater and more selective action on the urinary bladder, without the same degree of undesired side effects ordinarily attributed to other cholinergic agents.

Furtrethonium iodide is employed to encourage micturition and eliminate the need for catheterization in urinary retention due to temporary atony of the bladder following trauma such as a surgical operation or parturition, following early after the onset of poliomyelitis or following central or peripheral neural damage. *It should not be used when there is obstruction to the outlet from the urinary bladder.* Its use in patients with accompanying incontinence may cause increased discomfort. It is contraindicated in patients with a history of asthma, and it may produce auricular fibrillation in hyperthyroid conditions.

Dosage.—Furtrethonium iodide is administered orally in the form of tablets, and by subcutaneous injection as a solution. *The drug should never be administered intravenously.* The oral dose should be about five times the effective dose by injection, owing to a certain amount of destruction of the drug by the gastric juice. By subcutaneous injection it should be used cautiously, with small initial doses in aged patients and those with known cardiac disease. For adults, subcutaneous injection of 3 mg. is usually effective within fifteen minutes and should be administered with the patient lying down to avoid possible fainting from a fall in blood pressure when the full effect of the drug becomes manifest. The patient should also be kept covered to avoid possible consequences of such vasomotor effects as flushing and chilling. If this dose does not produce sweating or voiding, a second dose of 5 mg. may be tried after thirty to sixty minutes. Should this prove ineffective, catheterization should be performed and subsequent injections of 4.5 and 7.5 mg., respectively, at eight hour intervals should be tried to avoid recatheterization if possible. If the maximum dose of 7.5 mg. does not cause voiding, the drug may be considered ineffective. An oral maintenance dose of 10 mg. to 30 mg. two or three times daily may be adequate after urination is once started, and may be safer for stimulation of such function in elderly patients.

In children the following schedule of subcutaneous dosage is recommended:

0 to 4 yr.	1.25 to 2.5 mg.
5 to 9 yr.	2.00 to 3.0 mg.
10 to 19 yr.	2.50 to 5.0 mg.

When unwanted side effects occur, such as tachycardia or undue fall in blood pressure, these effects may be abolished by the subcutaneous injection of atropine sulfate, 0.4 mg., plus additional gradually increased doses of 0.6 mg. and 0.8 mg. if necessary.

Tests and Standards.—

Furtrethonium iodide occurs as a white to cream-colored, crystalline powder, with a characteristic odor. It melts between 115 and 119° C. It is very soluble in water and alcohol and practically insoluble in benzene. A 1 per cent solution of furtrethonium iodide is clear and practically colorless, and has a *p*H between 5.3 and 6.0.

Add about 50 mg. of furtrethonium iodide to 2 ml. of sulfuric acid, then add about 5 ml. of chloroform and shake: the chloroform layer is violet in color (*iodide*).

Dissolve about 0.1 Gm. of furtrethonium iodide in 5 ml. of water and acidify with sulfuric acid. Add an excess of a saturated aqueous solution of picric acid containing several drops of sulfuric acid: a yellow, crystalline precipitate is obtained which melts between 167 and 170° C.

Dry about 2 Gm. of furtrethonium iodide, accurately weighed, over phosphorus pentoxide in a vacuum for 4 hours: the loss in weight does not exceed 0.5 per cent.

Char about 1 Gm. of furtrethonium iodide, accurately weighed, over a low flame. Cool, then add 1 ml. of sulfuric acid and continue ignition until no carbon remains: the residue does not exceed 0.1 per cent.

Transfer about 0.25 Gm. of dry furtrethonium iodide, accurately weighed, to a semimicro Kjeldahl flask and digest with 5 ml. of sulfuric acid, 0.1 Gm. of selenium, 0.2 Gm. of mercuric oxide and 2.7 Gm. of potassium sulfate for 1 hour. Dilute the clear solution to 15 ml. with water, make it alkaline with 40 per cent sodium hydroxide and then add 10 ml. of 40 per cent sodium thiosulfate. Distill the ammonia into 20 ml. of 4 per cent boric acid containing 6 drops of a 1:5 mixture of methyl red T. S. and bromcresol green T. S. Titrate the liberated ammonia with 0.05 *N* hydrochloric acid. Each ml. of 0.05 *N* hydrochloric acid is equivalent to 0.0007004 Gm. of nitrogen: the nitrogen *content is not less than 5.0 or more than 5.3* per cent.

Transfer 0.2 Gm. of dry furtrethonium iodide, accurately weighed, to a 250 ml. beaker containing about 150 ml. of distilled water. Add 15 ml. of silver nitrate T. S. and 5 ml. of 10 per cent nitric acid. Stir the reactants thoroughly and heat on a steam bath to about 80° C. Allow the precipitate to settle and filter through a tared crucible. Wash the precipitate with hot water which has been made slightly acid with nitric acid. Continue the washing until the wash solution shows only a faint turbidity when treated with a drop of hydrochloric acid. Wash finally with hot water and dry at 105° C. to constant weight (about 4 hours). Each gram of silver iodide is equivalent to 1.138 Gm. of furtrethonium iodide: the amount of furtrethonium iodide is not less than 97 or more than 101 per cent.

Furtrethonium Iodide Tablets: Dissolve 20 tablets of furtrethonium iodide in 10 ml. of water, filter the solution and add an excess of a saturated solution of picric acid. Cool in an ice bath and remove the solid by filtration: the melting point of the dry picrate is between 167 and 170° C. The powdered tablets respond to the identification test for iodine described in the monograph on furtrethonium iodide.

Crush sufficient tablets to give the equivalent of about 0.2 Gm. of furtrethonium iodide. Quantitatively transfer the powder to a 150 ml. beaker and add about 50 ml. of water. Heat the solution on a steam bath for about 30 minutes and filter it into a 250 ml. beaker, washing the filter paper thoroughly with several portions of distilled water. To the combined filtrate and washings add 15 ml. of silver nitrate T. S. and 5 ml. of 10 per cent nitric acid. Proceed with the assay as described in the last paragraph in the monograph on furtrethonium iodide beginning with, "Stir the reactants thoroughly . . . ." The *tablets contain not less than 95 or more than 105 per cent of the* claimed amount of furtrethonium iodide.

Furtrethonium Iodide Ampuls: Add an excess of a saturated solution of picric acid to 5 ml. of the ampul solution. Cool the solution in an ice bath and remove the solid by filtration: The melting point of the dry picrate is between 167 and 170° C. The solution responds to the identification test for iodine listed in the monograph on furtre*thonium iodide*.

Transfer 5 ml. of the solution from the ampuls to a 100 ml. volumetric flask and add 20 ml. of water. To this solution add 1.5 Gm. of potassium carbonate, heat on a steam bath and add about 2.5 ml. of 5 per cent aqueous potassium permanganate in 0.5 ml. portions, rinsing the neck of the flask with water and heating after each addition. Continue the addition of potassium permanganate solution in 0.2 ml. portions *until the solution remains pink after heating for 2 minutes*. Add a drop of alcohol to remove the pink color, cool the solution to room temperature and dilute to volume with water. Mix thoroughly and filter the solution, discarding the first 20 ml. Transfer exactly 50 ml. of the filtrate to a 250 ml. Erlenmeyer flask; add 0.5 Gm. of potassium iodide, 15 ml. of 10 per cent sulfuric acid and titrate the iodine liberated with 0.01 *N* sodium thiosulfate. Each ml. of 0.01 *N* thiosulfate is equivalent to 0.000445 Gm. of furtrethonium iodide: the amount of furtrethonium iodide is not less than 95 or more than 105 per cent of the claimed amount.

Smith, Kline & French Laboratories, Philadelphia

Solution Furmethide Iodide: 5 mg. per cc., 1 cc. ampuls. For subcutaneous injection only.

Tablets Furmethide Iodide: 10 mg.

U. S. patent 2,185,220; U. S. trademark 381,093.

ADRENAL CORTEX EXTRACT (See New and Nonofficial Remedies 1949, p. 360).

The following dosage form has been accepted:

Armour Laboratories, Chicago 9

Solution Adrenal Cortex Extract: 50 dog units per cc., 10 cc. vials. Each cc. contains not more than 3 mg. of gland extractives having a potency equivalent to 50 dog units when assayed by the Cartland-Kuizenga method, in physiologic solution of sodium chloride. Preserved with alcohol 10 per cent.

U. S. patent 2,096,342 (Oct. 19, 1937; expires 1954).

INFLUENZA VIRUS VACCINE, TYPES A AND B (See New and Nonofficial Remedies 1949, p. 489).

The following dosage form has been accepted:

Lederle Laboratories, Division American Cyanamid Company, Pearl River, N. Y.

Influenza Virus Vaccine, Types A and B: 1 cc. vials (one immunization) and 10 cc. vials (ten immunizations). Preserved with sodium ethylmercurithiosalicylate 1:10,000.

OXIDIZED CELLULOSE (See New and Nonofficial Remedies 1949, p. 436).

The following dosage forms have been accepted:

Parke, Davis & Co., Detroit 32

Oxycel Cotton Pledgets: 2¼" x 1" x 1" in a glass vial.

Oxycel Gauze Discs (Foley Cones) (4 ply): 5" and 7", each in a glass vial.

Oxycel Gauze Pads (8 ply): 3" x 3" in a glass vial.

Oxycel Gauze Strips (4 ply): 18" x 2" in a glass vial.

U. S. trademark 410,383.

BUTABARBITAL SODIUM (See New and Nonofficial Remedies 1949, p. 456).

The following dosage form has been accepted:

McNeil Laboratories, Philadelphia 32

Tablets Butisol Sodium: 30 mg. and 100 mg.

U. S. trademark 378,610.

AMINOPHYLLINE-U. S. P. (See New and Nonofficial Remedies 1949, p. 322).

The following dosage form has been accepted:

Gold Leaf Pharmacal Co., New Rochelle, N. Y.

Tablets Aminophylline: 0.1 Gm.

METHADONE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 30).

The following dosage form has been accepted:

The S. E. Massengill Company, Bristol, Tenn.

Solution Methadone Hydrochloride: 10 mg. per cc., 10 cc. vials. Preserved with chlorobutanol 0.5 per cent.

METHAMPHETAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 227).

The following dosage form has been accepted:

McNeil Laboratories, Philadelphia 32

Tablets Syndrox Hydrochloride: 5 mg.

PENICILLIN FOR PARENTERAL USE IN AQUEOUS SOLUTION (See New and Nonofficial Remedies 1949, p. 150).

The following dosage form has been accepted:

Merck & Company, Inc., Rahway, N. J.

Crystalline Sodium Penicillin G: 1,000,000 units, 20 cc. vials.

PENICILLIN FOR TOPICAL APPLICATION (See New and Nonofficial Remedies 1949, p. 158).

The following dosage form has been accepted:

Schenley Laboratories, Inc., New York 1

Ophthalmic Ointment Crystalline Potassium Penicillin G: 2,000 units per gram, 3.54 Gm. tubes.

PROPYLTHIOURACIL (See New and Nonofficial Remedies 1949, p. 417).

The following dosage forms have been accepted:

Eaton Laboratories, Inc., New York 18

Tablets Propylthiouracil: 50 mg.

Carroll Dunham Smith Pharmacal Company, New Brunswick, N. J.

Tablets Propylthiouracil: 50 mg.

TRIPELENNAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 25).

The following dosage forms have been accepted:

Ciba Pharmaceutical Products, Inc., Summit, N. J.

Cream Pyribenzamine Hydrochloride 2%: 50 Gm. and 459 Gm. jars.

Ointment Pyribenzamine Hydrochloride 2%: 50 Gm. and 459 Gm. jars.

U. S. patent 2,406,594.

ASCORBIC ACID-U. S. P. (See New and Nonofficial Remedies 1949, p. 560).

The following dosage forms have been accepted:

The Stuart Company, Pasadena, Calif.

Tablets Ascorbic Acid: 100 mg.

Tablerock Laboratories, Greenville, S. C.

Tablets Ascorbic Acid: 50 mg.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

Edited by
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Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, SEPTEMBER 24, 1949

PATHOGENESIS OF HYPERTENSIVE ARTERIAL NECROSIS

Hypertension in man has for some time been recognized as associated with changes in the arteries and arterioles. In 1919 Fahr described acute arterial lesions which were invariably present in malignant nephrosclerosis. These lesions were most severe and widespread in the kidneys and occurred less constantly in other organs, particularly in the pancreas, adrenals and intestines. Fahr believed that necrotizing arteriolitis is the primary lesion in malignant necrosis and gives rise to hypertension by narrowing the renal vascular bed. Malignant hypertension was believed to be a form of primary nephritis in which the hypertension was a secondary effect. The tendency today is to regard malignant hypertension as a form of primary hypertension leading to but not caused by structural renal damage.

Goldblatt[1] produced experimental hypertension in dogs and in monkeys by constriction of the main renal artery. If the other kidney was removed or its artery clamped, the hypertension would persists for years. Necropsies on these animals revealed arteriolar degeneration and necrosis most frequently in the kidneys but also in the gastrointestinal tract and many other internal organs. These lesions were not distinguishable from those found in malignant hypertension in man. The only difference noted was that the kidney did not show arteriolar necrosis in the dog, whereas it did in man. This discrepancy, according to Goldblatt, affords a clue to the pathogenesis of this lesion. In the experimental animal the intravascular pressure within the kidney is low, because the method of inducing hypertension involves the constriction of the main renal artery. In man, the intrarenal vascular tension is high because there is sclerosis and constriction of the preglomerular arterioles. It may be that the only arterioles which become necrotic are those subjected to high bursting tension and to the hypothetical toxic substance in the blood which results from renal insufficiency. Goldblatt points out that in the malignant phase in the experimental animal, even when it terminates fatally in as little as forty-eight to seventy-two hours, the changes which occur in the blood vessels are similar to those of the terminal phase of human malignant hypertension.

In the malignant phase in the experimental animal, the changes do not occur in the vessels of the kidney beyond the site of the clamp, where there is no hypertension. The vascular changes in the malignant phase do not occur without elevation of blood pressure in animals with bilateral nephrectomy in which profound azotemia develops, or without renal excretory functional disturbances in animals with great degree of hypertension of long standing. It appears, therefore, that impairment of renal function together with increased bursting tension of the vascular wall are necessary conditions for the production of the pathologic changes in the vessels and that even in human beings these changes usually occur only terminally. Interference with the blood supply of any organ other than the kidney does not result in either temporary or permanent elevation of blood pressure. Renal excretory insufficiency by itself is not sufficient, according to Goldblatt, for the development of hypertension.

Wilson and Pickering[2] found acute arterial lesions, structurally identical with those of malignant hypertension in man, in rabbits with arterial hypertension produced by renal artery constriction according to the technic of Goldblatt. These lesions were most frequent and severe in the intestine, but were also present in the stomach, liver, adrenal gland, heart and eye. They were absent from the kidney, to which the renal artery had been constricted. It appeared, therefore, that a greatly raised intra-arterial pressure is a chief factor in determining these lesions in human and experimental hypertension.

Byrom and Dodson[3] confirmed the observations of Wilson and Pickering and of Goldblatt by demonstrating that constriction of the renal artery in a rat protects the kidney from vascular damage. This fact suggests that increased intravascular tension plays a direct part in causing vascular lesions. It is assumed that an intravascular tension leads directly to sudden overstretching of the vascular wall, the overstretched muscle undergoing necrosis and lysis. Byrom and Dodson demonstrated in young adult rats that brief artificial distention of the arterial tree causes typical focal arterial necrosis, the smaller arteries of the kidney being selectively vulnerable. They believe that neither uremia nor toxic absorption from injured renal tissue is a constant or necessary factor in the process and that arterial necrosis represents an attempt to repair a threatened breach due to local death and lysis of overstretched medial muscle fibers in the terminal arteries and arterioles.

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[1] Goldblatt, H.: The Renal Origin of Hypertension, Physiol. Rev. **27**: 120-165 (Jan.) 1947.

[2] Wilson, C., and Pickering, G. W.: Acute Arterial Lesions in Rabbits with Experimental Renal Hypertension, Clin. Sc. **3**: 343-355 (Aug. 15) 1938.

[3] Byrom, F. B., and Dodson, L. F.: The Causation of Acute Arterial Necrosis in Hypertensive Disease, J. Path. & Bact. **60**: 357-368 (July) 1948.

Early cases of essential hypertension in man frequently fail to show renal insufficiency. However, it is possible that the development of more sensitive tests may yet demonstrate its presence and its role in the causation of hypertension.

RUSSIAN SCIENTISTS AND PRIORITIES FOR MEDICAL DISCOVERIES

American newspapers and magazines have been chuckling over claims by the Russian press that Russians invented airplanes, radios and innumerable other mechanical devices. In the official publication, *VOKS,* circulated by the U. S. S. R. Society for Cultural Relations with Foreign Countries, one Alexander Popovsky[1] says that Russian technical thought has often been consulted abroad and insists that the law of conservation of energy, the Voltaic arc, the incandescent lamp, galvanoplastics, Golubitzky's telephone, the radiotelephone, the telegraph and many other Russian discoveries and inventions are all wrongfully ascribed to Germans, Englishmen, Americans and Italians. He asserts that the Giemsa stain was really discovered by the Russian Romanovsky instead of the German Giemsa. He says that the parasite that bears the name of Colonel Leishman was described by a Russian named Borovsky five years earlier than the description by Wright, who gave it the name of Leishmania in honor of Leishman, who was his superior officer. Then he says that Sobolev really discovered the cause of diabetes and the treatment for it, and he accuses Sherrington and Görning of taking work on the cortex of the brain from a Russian named Vvedensky. Much of his discussion concerns some discoveries alleged to have been made by one Gurvich who recognized mitogenetic radiation, which Popovsky says may yet be recognized as a great advance in the study of cancer. Apparently Audubert, a Frenchman, claimed credit for this discovery in 1938 at an international conference of the Faraday Society, held in Oxford, and at that time a Professor Prinsheim of Belgium informed the audience that Gurvich had made the discoveries previously. Another instance cited is that of the Austrian surgeon Starlinger, who claimed priority for the development claimed by the Russian Vyshnevsky. According to Popovsky, Leriche endeavored to take over this discovery as did also a Portuguese scientist named Pereia. However, Finsterer informed a surgical society in a meeting in Vienna in 1946 that Starlinger's discovery had actually been made previously by Vyshnevsky.

In the not so distant past, Russia's most ambitious and talented students traveled abroad to acquire knowledge of scientific methods. These men returned to Europe imbued with admiration for the scientific and cultural accomplishments of their neighbors. In the "Autobiographical Notes of Sechenov" appear expressions of admiration and gratitude by Sechenov, who is known as the "father of Russia's physiology," toward the great leaders of medicine in other countries under whom he had studied. Almost with reverence Sechenov speaks of Carl Ludwig, Bunsen, Johannes Mueller, Helmholtz and Claude Bernard. The biographies of Mechnikov, Kovalevskiy, Pavlov, Botkin and Pirogov present similar attitudes. Now comes the recent upsurge in nationalist feeling which is hardly in accord with Marxist tenets and which sounds a call "to break the bonds of servility to the foreign authorities."

In times such as these, when nationalist feeling flames high, the essay of William Osler on "Chauvinism in Medicine" merits rereading. The following paragraph is particularly noteworthy:

> With our History, Traditions, Achievements, and Hopes, there is little room for Chauvinism in medicine. The open mind, the free spirit of science, the ready acceptance of the best from any and every source, the attitude of rational receptiveness rather than of antagonism to new ideas, the liberal and friendly relationship between different nations and different sections of the same nation, the brotherly feeling which should characterize members of the oldest, most beneficient and universal guild that the race has evolved in its upward progress—these should neutralize the tendencies upon which I have so lightly touched.

And one might well read also at such times the definition of the "profession of medicine" by Sir Thomas Watson, who wrote in his "Practice of Physic":

> The profession of medicine, having for its end the common good of mankind, knows nothing of national enmities, of political strife, of sectarian dissensions. Disease and pain the sole conditions of its ministry, it is disquieted by no misgivings concerning the justice and honesty of its client's cause; but dispenses its peculiar benefits, without stint or scruple, to men of every country, and party, and rank, and religion, and to men of no religion at all.

CHLORAMPHENICOL (CHLOROMYCETIN®) AND AUREOMYCIN

The earliest specific remedies, quinine, mercury, antimony and arsphenamine, Woodward[1] points out, were effective chiefly against the larger infectious agents, the protozoa and the spirochetes. The introduction of the sulfonamide drugs extended the field of specific medication to include infections caused by bacteria of the gram-positive type and some of the antibiotics, proved effective against the gram-negative group of bacilli as well. Streptomycin is effective against a number of the gram-negative organisms and against certain clinical types of tuberculosis. Chloramphenicol and aureomycin, two antibiotics introduced most recently, appear to be highly specific against many members of the rickettsial group and against some of the viral-like agents of disease.

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[1] Popovsky, A.: A Few Words About Priority in Science, VOKS Bull. **57**: 36, 1949. (U. S. S. R. Society for Cultural Relations with Foreign Countries.)

[1] Woodward, T. E.: Chloromycetin and Aureomycin: Therapeutic Results, Ann. Int. Med. **31**: 53-82 (July) 1949.

The effectiveness of chloramphenicol, isolated by Burkholder from an actinomycete, Streptomyces venezuelae, and prepared as a crystalline compound by Ehrlich and his co-workers,[2] was demonstrated in rickettsial and psittacosis infection of chick embryos and mice. The brucellae, the salmonellae and the coliform bacteria showed considerable degree of sensitivity to this new antibiotic.

Aureomycin, first isolated by Duggar [3] from an actinomycete, Streptomyces aureofaciens, seems to extend its activity over a wider range of infectious agents than that of any of its predecessors. The product is moreover effective when given by mouth, and its use has not thus far been accompanied with serious untoward effects. The most striking effect of aureomycin is its therapeutic activity in all of the known rickettsias and the viruses of psittacosis-lymphogranuloma venereum group in embryonated hen's eggs, mice and guinea pigs. The antibiotic has been found to be totally ineffective against all other viruses that have been tested thus far (Wong and Cox in Woodward [1]). Aureomycin is the first agent to exert regular and definite beneficial effect in cases of primary atypical pneumonia. The results of oral therapy with aureomycin in pneumonias due to various types of pneumococci have been comparable with those obtained with penicillin.

Both chloramphenicol and aureomycin have been found effective in the treatment of Rocky Mountain spotted fever, scrub typhus and murine typhus. Chloramphenicol appeared to be the drug of choice in epidemic typhus, while aureomycin has proved beneficial to patients with Q fever. Aureomycin acted as a specific in the psittacosis-lymphogranuloma venereum group of diseases. Chloramphenicol is the drug of choice in typhoid. Both chloramphenicol and aureomycin appear to be equally effective in brucellosis and in tularemia.

Current Comment

SELF-EMPLOYED PHYSICIANS AND THE SOCIAL SECURITY ACT

Under H. R. 2893, physicians, lawyers and others who are self employed and carry on a "trade or business" would come within the provisions of the Social Security Act. As a result of action taken by the Ways and Means Committee of the House of Representatives a new bill (H. R. 6000) has been introduced in the House. The new bill specifically exempts physicians and certain other groups from the proposed broadened coverage of the Social Security Act. This bill has been approved by the Committee by a vote of 22 to 3. H. R. 6000 would not include in a "trade or business" the performance of service "by an individual in the exercise of his profession as a physician, lawyer, dentist, osteopath, veterinarian, chiropracter, or optometrist, or as a Christian Science practitioner, or as an aeronautical, chemical, civil, electrical, mechanical, metallurgical, or mining engineer; or the performance of such service by a partnership." Physicians, who, of course, "exercise" a profession, will seriously oppose any attempt to include them in Social Security coverage.

ROENTGEN EXAMINATION OF THE CHEST

Recent years have seen the development of a widespread recognition of the limitations of single posteroanterior roentgenograms or photofluorograms of the chest, especially as far as the detection of small pulmonary lesions is concerned.[1] This limitation is understandable in view of the size, location and relative density of some of the early or minimal lesions in question, plus the factor of personal equation in interpretation of the roentgenogram. Unfortunately, this diagnostic survey or screening type of examination is often called a "roentgen examination." Actually the difference between a survey and a roentgen examination is significant. Taking a single miniature or a large roentgenogram of the chest does not constitute a roentgen examination in the fullest meaning of the latter term. One is a brief medical diagnostic procedure and the other a careful medical study. A roentgen examination of the gastrointestinal tract would usually include adequate fluoroscopic examination followed by multiple views, with the patient in different positions. Similarly, roentgen examination of the urinary tract would include a preliminary single (or stereoscopic) roentgen examination of the abdomen, followed by roentgenograms made after injection of a contrast medium; these roentgenograms may be plain or stereoscopic, with the patient horizontal or erect and the approach anteroposterior, posteroanterior, oblique or otherwise. Similarly, roentgen examination of the respiratory tract should mean preliminary fluoroscopy followed by such roentgenographic studies as are indicated. In one case posteroanterior and lateral roentgenograms may be adequate; in another stereoscopic posteroanterior and oblique views, and in a third posteroanterior, anteroposterior and posterior lordotic projections. In still other cases heavy density, Bucky diaphragm roentgenograms or roentgenograms made in different phases of respiration may be essential. Proper or complete roentgen examination of the chest may be just as material and time consuming as proper roentgen examination of the gastrointestinal or genitourinary tracts. However, the early diagnosis of pulmonary tuberculosis, bronchogenic cancer and other curable conditions of the respiratory tract renders such complete examination more than justifiable. The reliability of such roentgen examination of the lungs, when made by trained and experienced physicians, is believed to be of the same high degree as that of comparable roentgen examination of other organs or systems.

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[2] Ehrlich, J.; Bartz, Q. R.; Smith, R. M.; Joslyn, D. A., and Burkholder, P. R.: Chloromycetin, a New Antibiotic From a Soil Actinomycete, Science **106**: 417, (Oct. 31) 1947.

[3] Duggar, B. M.: Aureomycin: A Product of the Continuing Search for New Antibiotics, Ann. New York Acad. Sc. **51**: 177-181 (Nov. 30) 1948.

[1] Birkelo, C. C., and others: J. A. M. A. **133**: 359-366 (Feb. 8) 1947. Garland, L. H., Radiology **52**: 309-328, 1949.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 19, 1949.

Sixteen House Members Study Health Plans Abroad

Nine Democratic and seven Republican members of the House Committee on Interstate and Foreign Commerce are members of the Congressional party which on September 12 began a two week tour to study government medical care systems in Europe. In the group are Representatives Crosser (Ohio), Beckworth (Texas), Klein (New York), Sullivan (Missouri), McGuire (Connecticut), Underwood (Kentucky), Biemiller (Wisconsin), Linehan (Illinois) and Wilson (Oklahoma), all Democrats, and the following Republicans: Hall (New York), Dolliver (Iowa), Scott and Gillette (Pennsylvania), Bennett (Michigan), O'Hara (Minnesota) and Ellsworth (Oregon). Their first engagement in London was a conference with Health Minister Aneurin Bevan. Six of the sixteen members are on the subcommittee which handles health legislation: O'Hara, Gillette, Bennett, Scott, Biemiller and Wilson.

Sickness Survey Bill Modified

The health legislation subcommittee of Senate Labor and Public Welfare Committee has approved a bill authorizing the Public Health Service to conduct a study of methods for a proposed national survey of incidence of chronic and degenerative diseases. As originally introduced, the bill (S. 2211) provided for the survey itself. Intercession by Senator Taft, a member of the subcommittee, resulted in the plan's being modified, so that it now calls merely for a preparatory study of methods. Eighteen months would be allowed for the preliminary investigation, and an expense ceiling of $200,000 is fixed.

The health subcommittee also has approved a prospective amendment of the Public Health Service Act which would make all advisory councils to the National Institute of Health uniform as to the number of members and mode of selection.

United Mine Workers Announces Medical Care Eligibility Rules

The Welfare and Retirement Fund, United Mine Workers of America, has promulgated a set of conditions governing eligibility for participation in the medical and hospital care program, effective Sept. 1, 1949. Maximum benefits—hospitalization, medical care while hospitalized, home and office care by a physician and drugs as prescribed by a physician—are available to: disabled union members receiving cash disability grants, widows receiving widows assistance cash grants, dependents of such members and widows and children of deceased members.

The same comprehensive privileges also are extended to the same groups even if such persons are not receiving cash grants because of outside sources of income, provided this income does not exceed 150 per cent of the maximum they would receive from the fund if there were no supplemental assistance. If it is in excess, benefits are limited to hospitalization and medical care during hospitalization. Members receiving pensions, along with wives and minor children, are eligible for the full range. Working or idle members of the union, and their families, may receive only hospitalization and inpatient medical care.

Veterans Administration Radioisotope Advisors Hold Annual Meeting

The third annual meeting of the Central Advisory Committee on Radioisotopes to the Department of Medicine and Surgery, Veterans Administration, was held in Washington September 15, with the following members present: Drs. Shields Warren, Atomic Energy Commission; Stafford Warren, University of California at Los Angeles; Hymer Friedell, Western Reserve University School of Medicine; Hugh Morgan, Vanderbilt University School of Medicine, and Perrin H. Long, Johns Hopkins University School of Medicine.

Dr. George Lyon, chief of VA's radioisotope section, reported that units are now active in twelve veterans hospitals and $1,000,000 has been spent to date in development of the atomic medicine program. Four additional units are scheduled to be activated within a year, he stated.

Coming Medical Meetings

Annual Conference of State Secretaries and Editors, Chicago, A. M. A. Building, Nov. 3-4. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Academy of Pediatrics, San Francisco, Nov. 14-17. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Hospital Association, Cleveland, Sept. 26-29. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 5-7. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 6-9. Dr. Frederick J. Brady, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Nov. 10-12. Col. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Central Society for Clinical Research, Chicago, Drake Hotel, Nov. 4-5. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Pensacola, Fla., Oct. 6-7. Dr. Arthur J Butt Jr., 1101 N. Palafox St., Pensacola, Fla., Secretary.

Indiana State Medical Association, Indianapolis, Sept. 26-29. Mr. Ray E. Smith, 1021 Hume-Mansur Bldg., Indianapolis 4, Executive Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

International College of Surgeons, United States Chapter, Atlantic City, Haddon Hall, Nov. 7-12. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10, Secretary.

Inter-State Post Graduate Medical Association of North America (International Medical Assembly), Philadelphia, Oct. 31-Nov. 3. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 3-6. Dr. W. Merritt Ketchum, 630 Shukert Bldg., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 6-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

Mississippi Valley Medical Society, St. Louis, Jefferson Hotel, Sept. 28-30. Dr. Harold Swanberg, 209-224 W. C. U. Bldg., Quincy, Ill., Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 30-Nov. 1. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Nevada State Medical Association, Elko, Sept. 29-Oct. 1. Dr. Roland W. Stahr, 118 California Ave., Reno, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 26-29. Dr. W. F. Donaldson, 8104 Jenkins Arcade, Pittsburgh 22, Secretary.

Southern Medical Association, Cincinnati, Nov. 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southwestern Medical Association, Albuquerque, New Mexico, Nov. 9-12. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Texas, Secretary.

Southwestern Surgical Congress, Houston, Tex., Shamrock Hotel, Sept 26-28. Dr. C. R. Rountree, 1200 N. Walker St., Oklahoma City, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder and Milwaukee Auditorium, Oct. 3-5. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15. Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

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ARMY

SYMPOSIUM FOR RESERVE MEDICAL OFFICERS

The second medico-military symposium for Medical Department Reserve officers of the Third Army Area will be held at Fort McPherson, Ga., October 19-21. The first symposium was held last April at Oliver General Hospital. The second symposium will be attended also by reserve officers of the various components of the Medical Department. The purpose of these meetings is to interest Reserve officers in subjects which have a medicomilitary significance. Among the numerous subjects to be discussed are:

A Reserve Officer's Evaluation of the ORC Training Program, by Col. James B. McLester, associate professor of medicine, Medical College of Alabama, Birmingham.

Policies Governing the Organized Reserve Corps, by Lieut. Col. J. J. Hamlin, Adjutant General's Section, Third Army.

Current International Situation, by Lieut. Col. Stephen M. Mellnik of the Third Army.

Insect and Rodent Control, by Major Samuel O. Hill (MSC), chief, Tropical Medicine and Parasitology Division, Third Army Medical Laboratory.

Military Medical Aspects of Rheumatic Fever, by Col. Charles L. Leedham, chief, Medical Service, Oliver General Hospital.

Medical Department Reserve Training Program, by Col. Floyd L. Wergeland, of the Surgeon General's Office.

Role of the Professional Consultant in Peace and War, by Brig. Gen. Frank B. Berry (R), New York.

Three films, "Soviet Medicine at the Front;" "Assignment Medicine" and "They Also Serve," produced by the American Medical Association, will be presented at the Post Theater on the second day of the symposium, on which day there will be a meeting also in nearby Atlanta with the Fulton County Medical Society addressed by Col. William L. Wilson (MC) of the Surgeon General's Office on Medical Plans for Civil Defense and Disaster. The buffet supper on the third day will be addressed by Lieut. General Alvan C. Gillem Jr., commander of the Third Army, Major General George E. Armstrong, deputy surgeon general, Department of the Army, and Major General Joseph I. Martin, commandant, Medical Field Service School.

FOUNDERS OF NEUROLOGY

The Armed Forces Institute of Pathology and the Army Medical Library prepared an exhibit entitled "Founders of Neurology of the Past Century," which was displayed at the Fourth International Congress of Neurology, Paris, France, September 5-10. The exhibit featured the photographs of the world's greatest neurologists, representing sixteen countries, and copies of their most outstanding work. The selection was made by a committee of twenty-five neurologists, with the cooperation of eighty-two contributors among the foremost of neurologists in the United States and was prepared under the direction of Dr. Webb Haymaker of the Armed Forces Institute of Pathology, who accompanied the exhibit to Paris. Others who went to Paris were Lieut. Col. Stephen W. Ranson, U. S. Army (MC); Lieut. Col. Edward H. McCue, U. S. Air Force (DC), and Comdr. Hannibal Hamlin, U. S. Navy (MC). Among those whose memories were thus honored were Claude Bernard, Cajal, Charcot, Helmholtz, Hughlings Jackson and Pavlov.

NURSE ASSIGNED TO RESEARCH ON ISOTOPES

The Surgeon General's office announces that Army nurse Lieut. Margaret E. Peters has been assigned to the team of specialists at the Army Medical Center, Washington, D. C., who are studying possibilities in the use of radioactive substances in the diagnosis and treatment of disease. The other members of the team are Capt. Robert J. Soberman and Capt. Richard P. Keating, both doctors, and Lieut. Col. Roy E. Maxwell, chemist. Lieutenant Peters is the first army nurse to be assigned to research on isotopes. The purpose of her assignment is to develop technics and procedures in the handling of radioactive substances which may be used by nurses in the future. Lieutenant Peters served overseas during World War II, landing with the Normandy force on the Utah beachhead. Following the war she was assistant director of nurses in the New Rochelle Hospital in Westchester County, N. Y.

NAVY

NEW COURSE IN AVIATION MEDICINE

Medical officers of the Regular Navy and the Naval Reserve may apply for a course in aviation medicine which will begin November 15 at the School of Aviation Medicine and Research, Pensacola, Fla. An agreement to remain on active duty for one year after completion of the course must be included in each application. The course will consist of an academic period of six months' duration and a flight training and flight indoctrination period of three months. Special training is offered in the medical aspects of atomic warfare, in problems of high acceleration and in the effects of high altitude flight.

Graduates of the complete course will be designated as flight surgeons and will be eligible for the extra compensation for duty involving flying with active aviation units.

Medical officers on active duty who desire to apply should do so by letter or dispatch to the Chief of the Bureau of Medicine and Surgery; inactive Reserve officers should apply to the Chief of the Bureau of Medicine and Surgery via the commandant of their Naval District.

CERTIFIED BY SPECIALTY BOARDS

The following additional medical officers have been certified by specialty boards:

Capt. James J. Sapero, M.C., American Board of Preventive Medicine and Public Health, and Comdr. Lester J. Pope, M.C., American Board of Internal Medicine; Lieut. Col. Warren H. Diessner, M.C., and Lieut. Col. Weldon J. Walker, M.C., both by the American Board of Internal Medicine.

GRADUATE INSTRUCTION

The following officers of the Regular Navy have been nominated for assignment to duty under instruction in the Navy's Graduate Medical Program:

Comdr. Marshall Cohen, Chicago, to instruction in the medical aspects of radiologic defense, D[illegible] C.

Comdr. James R. King [illegible] nstruction in virology and public health, Johns [illegible] f Hygiene and Public Health, Baltimore.

Comdr. James B. Shuler, Shenandoah, Va., to instruction in internal medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. Comdr. William C. Livingood, Hagerstown, Md., to instruction in otolaryngology, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. Comdr. Louis M. Tebow, Tamoroa, Ill., to instruction in surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. (jg) Ernest G. McKay, Tampa, Fla., to a residency in radiology, Naval Hospital, Philadelphia.

PERSONAL

Capt. Louis M. Harris (MC), now at the Naval Hospital, Great Lakes, Ill., received the degree Doctor of Medical Science on August 24 at the University of Pennsylvania Graduate School of Medicine.

Under sponsorship of the Navy, Dr. William C. Boyd, professor of immunochemistry, Boston University School of Medicine, went to Africa in August to visit research units, medical schools and native tribes. It is expected that his studies there will be of value to anthropologists and contribute also to the understanding of certain public health problems. Dr. Boyd is the author of books on anthropology and blood types.

AIR FORCE

AIR FORCE MEDICAL SERVICE

Reorganization of the Office of the Surgeon General, U. S. Air Force, has been completed. The medical service formerly had been under Army control.

Major General Malcolm C. Grow, the USAF Surgeon General, announces that the Office of the Surgeon General is divided into three directorates: (1) Directorate of Professional Services, (2) Directorate of Staffing and Education and (3) Directorate of Plans and Hospitalization.

The Office of the Surgeon General will supervise all medical activities of the Air Force, including operation of hospitals at Air Force bases in the Continental United States and in overseas areas. It will also render technical supervision over the School of Aviation Medicine, Randolph Air Force Base, Randolph Field, Texas; the Aero-Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio, and the Arctic Aero-Medical Laboratory, Ladd Air Force Base, Alaska.

The Air Force Medical Service is participating in joint staffing of Army general hospitals and other joint Army medical activities, including recruiting stations, the Armed Forces Institute of Pathology, the Army Medical Center, Central Dental Laboratories, Medical General Dispensaries, the Medical Nutrition Laboratory and the Armed Forces Medical Procurement Office. The personnel named to key positions in the Office of the Surgeon General are men of proved professional and administrative ability.

CIVILIAN INTERN PROGRAM

The U. S. Air Force Medical Service will commission 300 civilian physicians, now serving as interns, as first lieutenants on active duty with the Air Force Medical Reserve Corps, Major General Malcolm C. Grow, Surgeon General of the Air Force, has announced. Eligible to receive commissions are medical school graduates now serving internships at approved hospitals, who have at least six months of internship remaining. Physicians who are so commissioned will serve two months of active duty for each month of internship as commissioned members of the Medical Reserve Corps.

On completion of active duty tours, officers who apply and are selected as members of the regular Air Force Medical Corps will be eligible for participation in the Air Force residency program to be conducted at civilian and military hospitals. Officers who do not apply for commissions in the regular Air Force and who do not participate in the residency program may continue to serve on active duty as Reserve officers for specific periods of time. Information concerning the intern program may be obtained from the Officer's Procurement Branch, Office of the Surgeon General, Headquarters, U. S. Air Force, Washington 25, D. C.

AIR FORCE RECEIVES 3,706 MEDICAL OFFICERS FROM THE ARMY

As of July 29, 3,706 medical officers had been transferred from the Department of the Army to the recently established Air Force Medical Department, according to a joint Army-Air Force agreement in a proportional division of available medical officers, to meet the needs of the two services. The transfers were made after voluntary applications made by interested medical officers had been screened. Of this number, 407 were doctors of medicine, the remainder being officers of the Dental Corps, Veterinary Corps, Medical Service Corps, Army Nurse Corps, Dietitians, Physical Therapists and Occupational Therapists.

PUBLIC HEALTH SERVICE

FORTY MILLION DOLLAR CLINICAL CENTER

The substructure of the $40 million, fourteen story clinical center being built by the government for the National Institutes of Health at Bethesda, Md., is nearly completed, and the air-conditioned building is scheduled for completion by July 1952. In a press release, Oscar R. Ewing, Federal Security Administrator, said that the clinical center will play a leading part in the battle against chronic diseases and that it will house one of the best equipped medical and basic science laboratories ever built, together with hospital facilities for 500 patients. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, has said that the object of the planning committee was to design a center in which patients will be given medical care of the highest standards. Because of the meticulous care that must be taken before a new treatment is given to patients and the need for elaborate studies during treatment, laboratory space in the new clinical center will be twice that assigned to patients. Dr. Scheele stressed that the clinical center will provide not only the best medical care but such facilities for the patients' comfort as a barber shop, a beauty parlor, a circulating library and a chapel suitable for worship by all faiths. Patients will be selected from all parts of the country according to the nature of their illness. Diagnosis will be the sole ticket of admission, and only patients with the particular type of disease under study at the center will be accepted. Patients will be accepted on referral by their physician, hospital or other medical institution and will be referred back to their physician or institution when treatment is completed. The concentrated power of scientific men and machines, the announcement said, will be aimed at such long term diseases as mental illness, cancer, heart and circulatory ailments, diseases of metabolism and some types of infectious and tropical sickness.

The center will use the team technic, bringing together the skills of physicians and laboratory researchers and the discoveries of so-called pure science. The main building will enclose 17 million cubic feet (gross). The structure will be finished in red brick with limestone facing and aluminum window frames. There will be a bath, toilet and overhead shower in every room. Oxygen and suction will be supplied from central sources. Rooms will be painted in quiet pastel colors. Two patients usually will be assigned to each room.

The equipment for nuclear energy research will include a 12 million volt electrostatic generator, a synchrotron and a 2 million volt radiotherapy machine. The surgical suite will comprise eight rooms and a television control room. All anesthesia will be done by physicians. The emergency suite for treatment of accidents will be located in a sub-basement. The department for rehabilitation will administer occupational, physical and recreational therapy. Spiritual ministration will also operate within this area of patient care.

EXAMINATION FOR SANITARIANS (NUTRITIONIST)

A competitive examination for appointment of sanitarians (nutritionist) in the Regular Corps of the United States Public Health Service will be held November 14-16. Applications must be received no later than October 17. Appointments will be made in the grade of senior assistant sanitarian (equivalent to Army rank of captain). Appointments are permanent in nature and provide opportunities to qualified nutritionists for a life time career in hospital nutrition and public health.

Applicants who complete certain requirements within nine months of the date of the written examination will be admitted to the examination. Applicants who meet these requirements will be given an oral interview, physical examination and written professional tests. Examinations will be held at points throughout the United States, located as centrally as possible in relation to the homes of candidates.

Entrance pay for a senior assistant without dependents is $4,053.50; with dependents, $4,489. These figures include subsistence and rental allowance.

Additional information may be obtained from the Surgeon General, U. S. Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Maryland

Baker, Robert Lee............Baltimore
Clyman, Sidney G.............Baltimore

Massachusetts

Audet, H. H...............Newburyport
Beatty, Thomas P.........South Boston
Bennett, H. S....................Boston
Berenberg, Arnold L.............Chelsea
Blute, Robert D..............Roslindale
Borenstine, Joseph...............Boston
Browne, Edward R............Brookline
Bush, Stewart W...............Holyoke
Callahan, D. H. Jr............Arlington
Carpenter, Robert J. Jr........Plainfield
Colpoys, F. L. Jr...............Brighton
Ferguson, Bruce C............Roslindale
Garland, Merritt F. Jr.........Bradford
Giammalvo, J. T..........New Bedford
Gibbons, John F..............Lawrence
Golub, L. M.................Dorchester
Goodall, E. B. Jr........Newton Center
Graffeo, A. J...................Medford
Green, Sidney...................Chelsea
Harrow, B. R..................Pittsfield
Horgan, J. D...................Belmont
Hutchins, Maurice C............Malden
Land, W........................Boston
Latimer, E. L...........North Dighton
Leach, C. A. Jr..........West Peabody
Lerner, E. M. II.................Boston
McLellan, William A.........Brookline
Matzilevich, Benjamin........Worcester
Mazmanian, Joseph............Medford
Michel, Jean C..................Lincoln
Palken, Morton...............Brookline
Papageorge, W. G...........Dorchester
Perkins, H. A...............Winchester
Pucko, Joseph J. Jr...........Fitchburg
Sandberg, Russell G..........Worcester
Schwartz, Solomon S.........Dorchester
Silliker, Stuart Austin........Cambridge
Sisson, Warren R. Jr.........Brookline
Sosman, John L...............Chestnut
Spitzer, M. G....................Adams
Stewart, Goodwill M...........Brockton
Williams, Harry G.............Bedford
Wolfe, Alfred Louis Jr..........Waban
Woodhouse, Charles F..........Boston
Yules, Jacob H..................Boston

Michigan

Bristol, William R...............Detroit
Cohen, Maynard M..............Detroit
DeNio, A. E. Jr.................Detroit
DeWind, L. T................Muskegon
Estill, D. V..................Kalamazoo
Figiel, Leo S....................Detroit
Gaber, Ben......................Detroit
Harrelson, William D...........Owosso
Howell, James T...........Port Huron
Kempter, Albert H........Grand Rapids
Kowalski, George R...........Fennville
Leach, Robert B... ....Royal Oak
Lemon, B. K....................Detroit
Linkner, L. S...................Detroit
Lipnik, Morris J.................Detroit
McClellan, Robert John........Dearborn
McCormick, Glen E............Lansing
McCrea, J. W..................Clifford
McLane, Hugh J................Detroit
Martin, F. A..................Belleville
Martinus, M....................Holland
Mathews, Kenneth Pine......Ann Arbor
Nalepa, Eugene J........Benton Harbor
Neering, James C.............Bay City
Rupe, C. E......................Detroit
Sandberg, Avery A..............Detroit
Scott, Marrion U.........Grosse Pointe
Singer, Harold..................Detroit
Trader, Kenneth N..............Detroit
Veling, William F...............Detroit
Woolfenden, J. B................Detroit
Wooster, J. J................Dowagiac

Minnesota

Anderson, Ray Carl...........St. Peter
Berglund, Eldon B.........Minneapolis
Bly, Chauncey G.............Northfield
Bowen, Robert L. Jr............Hibbing
Franz, Willis M............*Mount Lake*
Frey, Richard J.................St. Paul
Goldish, Robert J................Duluth
Hauge, Erling T...........Minneapolis
Karlen, Markle.............Minneapolis
Le Bien, Wayne E..........Minneapolis
Mann, Frank D...............Rochester
Meek, Melton Price.............Winona
Mollison, Malcolm.............Faribault
Nesset, William D..............Delavan
O'Brien, William A. Jr.........St. Paul
O'Connor, Timothy D. Jr.......Renville
Ourada, Anthony L.......Walnut Grove
Pedersen, Robert L.........Minneapolis
Wente, Harold A...........Moose Lake

Mississippi

Arnold, H. L. Jr..............Meridian
Barnett, R. J................Greenwood
Bays, R. P................State College
Harris, Milton L.................Tunica
Lott, Hu'on Augustus...........Moselle
McDonnell, W. F. Jr..............Biloxi
McLaurin, John P. Jr..........Merigold
Ray, John E......................Rienzi
Rogers, Joseph B...........New Albany
Stewart, George B.............Carriere
Stone, Harry A................Columbus
Taintor, C. W. III...........Clarksdale
Tatum, Frederick E.........Hattiesburg
Webb, Watts Rankin..........Gulfport
Willoughby, Dan H.............Jackson

Missouri

Adams, John P.................Elsberry
Bailey, Drennan.........University City
Connor, Samuel W...........Camdenton
Engleman, Reinhold...........St. Louis
Hale, Ralph.... ....Kansas City
Hall, Eugene W........Webster Groves
Kistner, William F.............St. Louis
Kranson, Seymour J.......Independence
Mattes, Charles L. Jr..........Kirkwood
Monahan, Elmer P. Jr... ..Kansas City
Nelson, Gust H. Jr.........Kansas City
Rothweiler, Robert J...........St. Louis
Van Buskirk, William C....Kansas City
Walker, Willard B.............St. Louis
Walther, Roy A. Jr... ....Overland
Wiggins, George E.........West Plains

Nebraska

Blattspieler, L. H................Tobias
Boulden, Roger W.. ....Omaha
Clark, William M...............Omaha
Deffer, P. A............... ..Indianola
Dickerson, William J.............Butte
Donlin, R. E....................Omaha
Ehlers, W. A...................Omaha
Halley, N. B................Scottsbluff
Hansen, K. B....................Tilden
Healy, J. P......................Omaha
Horner, George M............Ainsworth
Ikast, D. E. N..................Gordon
Johnson, W. L......... ... . .Omaha
Kline, Nathan D...............Lincoln
Latenser, John F..... ....Omaha
Lauby, V. W.................Bridgeport
Lytton, G. J...................Fairbury
McFadden, H. W. Jr............Omaha
McQuillan, William M..........Lincoln
McWhorter, Clarence A.........Omaha
Miller, Harold B...............Lincoln
Roche, Jason Bernard...........Sidney
Root, C. M.......................Omaha
Smith, John E...................Omaha
Surber, E. G...................Norfolk
Yoachim, W. P. Jr.............Fairbury

Oklahoma

Becker, Fred W...............Chickasha
Berkenbile, Glen Lee..........Stillwater
Blender, John X..................Okeene
Cohen, Eugene S....................Tulsa
Downing, Joseph J.............Norman
Ford, Frederick R........Oklahoma City
Le Neve, Robert T.............Hooker
Lincoln, Richard B.......Oklahoma City
Morgan, Carl C.....................Alva
Parker, James W...............Elk City
Reynolds, Ernest W. Jr...........Tulsa
Spence, Ray E..............Pauls Valley
Stratton, Emil F................Carnegie
Thuringer, Carl B.......Oklahoma City
Westbrook, Brock R. Jr....Broken Bow

Pennsylvania

Anderson, W. R.............Greensburg
Baird, William Free........Wilkinsburg
Campbell, Jack S................*DuBois*
Carroll, K. M.................Lancaster
DeAntonio, Carlo P............Scranton
Dugan, Thomas M..........Twin Rocks
Fly, Orceneth A. Jr........Philadelphia
Grotts, B. F. .. ..Pittsburgh
Hornick, Edward Jay.........Pittsburgh
Humes, Alexander B..........Aliquippa
Kay, J......................Philadelphia
Kay, Richard..............Philadelphia
Koch, J. C.....................Scranton
Kunkel, William M. Jr......Harrisburg
Kushner, Daniel S..........Philadelphia
Ludwig, J. S......................York
Lurting, F. W................Pittsburgh
McNinch, James R. Jr..West Alexander
McParland, J. J. Jr..........Pittsburgh
Maher, Joseph J............Shenandoah
Masland, R. P. Jr...............Carlisle
Medlock, James Bryce........Pittsburgh
Pickett, M. E................Langhorne
Powell, E. J................Philadelphia
Prutzman, G. W..............Palmerton
Pugh, D. S................Beaver Falls
Reisner, Lewis Carl.........Philadelphia
Reiter, Martin D..............Tarentum
Rose, Isadore..................Plymouth
Veenis, C. Y. Jr............Wilkinsburg
Watson, Joseph H..........Philadelphia
Woldow, Asher.............Philadelphia

Utah

Stucki, John F....................Delta

Vermont

Bove, Edward R................Rutland
Keighley, Thomas J...........Burlington
Manheim, Gilbert.............Burlington
Wheeler, Dean H........Enosburg Falls

Virginia

Blanton, Frank Mc...........Richmond
Brooks, James W...........Winchester
Dorian, Alan L..............Alexandria
Johnson, William H..........Arlington
Melcher, George W. Jr......Portsmouth
Sieber, Homer A...............Roanoke
Stonesifer, Paul S. Jr..........Roanoke
Zirkle, George A. Jr...........Danville

Wisconsin

Babbitt, Donald P.................Racine
Bailey, Robert W............Wauwatosa
Bruchs, Robert V.............Wautoma
Chapman, Samuel B. Jr.........Madison
Fencil, Wayne J... ....Casco
Mayer, Richard J............Milwaukee
Norby, Richard G............Milwaukee
Wasserburger, Richard H.....Minocqua

Philippine Islands

Nubla, T. L.......................Manila
Padua, Franciso G.....Pasey Rizal City

Medical News

(Physicians will confer a favor by sending for this department items of general interest: such as relate to society activities new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

County Blood Bank Opens.—The Sonoma County Community Blood Bank opened August 20. A nonprofit organization was formed, composed of physicians and other residents of the county. The blood bank is endorsed by the Sonoma County Medical Society, and its technical aspects will be under the society's direction. A service fee of not more than $7.50 a unit will be charged. Dr. Owen F. Thomas, Santa Rosa, is director of the blood bank.

Positions Open for Psychiatrists.—The California Personnel Board will conduct a nationwide examination for director of clinical services in mental institutions November 29. The applicants must have a certificate in psychiatry issued by the American Board of Psychiatry and Neurology or eligibility for examination for a certificate as evidenced by a written statement by the secretary of the board. Positions are open in a small state institution or clinic, mental hospital, a correctional institution and in the state department of mental hygiene. Applications are obtainable from the State Personnel Board in Sacramento, San Francisco and Los Angeles and must be filed not later than November 8 with the Personnel Board, 1015 L Street, Sacramento.

ILLINOIS

County Society Lectures.—The Illinois State Medical Society has arranged the following programs for county medical societies:

McHenry County Medical Society, October 11 in Spring Valley, Aaron E. Kantor, Chicago, Office Gynecology and Use and Abuse of Hormonal Treatment in Gynecology.
La Salle County Medical Society, October 13 in La Salle, Dr. Philip Thorek, Chicago, Surgery of the Colon (motion picture demonstration).
Fulton County Medical Society, *October 13 in Canton*, L. Martin Hardy, Chicago, Recognition and Manipulation of Malformations of the Elementary Tract in Infants and Children.
Iroquois County Medical Society, October 18 in Watseka, Leo Kaplan, Chicago, Psychosomatic Medicine.
Macon County Medical Society, October 18 in Decatur, Guy V. Pontius, Chicago, Present Status of Gastric Surgery.
Effingham County Medical Society, October 20 in Effingham, Willard O. Thompson, Chicago, Female Endocrinology.

Chicago

The Annual Belfield Lecture.—The Chicago Urological Society will present the annual William T. Belfield Memorial Lecture October 27, given by Dr. Charles Huggins, University of Chicago, on the "Quality of Urologic Tumors." All meetings for the coming year will be at the Congress Hotel.

Lectures for Laymen at Museum.—The Museum of Science and Industry is presenting a series of six free lectures on Sundays at 3 p. m. The remaining lectures, all by Chicagoans, are:

Sept. 25, Dr. Roland P. Mackay, The Successful Marriage.
Oct. 2, W. W. Bauer, How to Be Happy Though Healthy.
Oct. 9, M. Edward Davis, You and Your Change of Life.
Oct. 16, Roger A. Harvey, Progress in X-Ray Diagnosis.
Oct. 23, Carl C. Pfeiffer, A Miracle Drug Is Born.

Instruction by Television—The Lewis Memorial Maternity Hospital will use television for instruction in obstetric and gynecologic procedures in a graduate teaching program open to physicians without charge. Facilities will permit the attendance of 150. The program will be presented from 9 a. m. to 4:30 p. m., October 24-29, under the direction of Dr. Herbert E. Schmitz, chairman, department of obstetrics and gynecology, Stritch School of Medicine of Loyola University. Lectures and demonstrations will be given on twenty-seven subjects. This program will be interspersed with television demonstrations of spontaneous and instrumental deliveries and gynecologic operative procedures under saddle block anesthesia. With a number of screens in the hospital attending physicians will be able to observe details of the procedures and hear discussions carried on between operating surgeons. This televised presentation of a teaching program is made possible through the cooperation of Ciba Pharmaceutical Products, Inc., and the Radio Corporation of America. Visiting professors taking part in the program include Drs. Russell J. Moe, Minneapolis; Gerald W. Gustafson, Indianapolis; Leroy A. Calkins, Laurence-Kansas City, Kan.; J. P. Greenhill, Chicago; John Adriani, New Orleans.

Lectures on Atomic Medicine.—A series of public lectures on the relation of atomic energy to biology and medicine will be held at the Chicago Medical School on Wednesdays October 12 through November 30 at 12:30 p. m. The lectures will cover the physical principles of radiation; the effects and uses of radiation, and protection against and cure of its effects. Included in the series will be two motion picture films on the Bikini atom bomb experiment. The program is as follows:

Oct. 12, Willard F. Libby, Ph.D., University of Chicago, Radioactive Isotopes; Applications to Medicine.
Oct. 19, A. R. Goldfarb, Ph.D., Chicago Medical School, Radioactive Isotopes in Biological Research.
Nov. 2, Commander C. A. Erickson (CEC), U. S. Navy, Operation Cross Roads (Motion Pictures).
Nov. 9, Elizabeth E. Painter, Ph.D., University of Illinois Medical School, Chicago, Patho-Physiological Effects of Radiation.
Nov. 16, Leonida Marinelli, M. A., Argonne National Laboratory, Chicago, Medical Uses of Radioactive Isotopes.
Nov. 30, Austin M. Brues, Argonne National Laboratory, Chicago, Nature and Therapy of Radiation Sickness.

At the conclusion of the series the lectures will be published.

KENTUCKY

Cancer Detection Program.—A new service that will enable physicians to obtain free diagnoses of tissue for detection of cancer of indigent patients has been set up by the Division of Cancer Control of the state department of health in cooperation with the Kentucky Division of the American Cancer Society. Under the program, which has the support of the Kentucky Society of Pathologists, a doctor can send suspected tissue to any of sixteen cooperating pathologists for diagnosis.

State Medical Meeting.—The Kentucky State Medical Association will hold its annual meeting as a memorial to William A. Atchison in Owensboro October 6-8. The tentative program includes the following out-of-state speakers:

Richard H. Overholt, Brookline, Mass., The Most Favorable Internal Cancer.
Ernest E. Irons, President, American Medical Association, Chicago, Freedom of American Medicine.
Earl C. Elkins, Rochester, Minn., Treatment of Poliomyelitis.
Charles A. Doan, Columbus, Ohio, Advance in the Recognition and Therapy of the Hematologic Dyscrasias.

The Oration in Surgery, "Highlights in Urology," will be given by Dr. William R. Miner of Covington. At the annual subscription dinner Friday at 7 p. m. "Compulsory Health Insurance" will be the subject of addresses by Leone Baxter and Clem Whitaker of Chicago.

MICHIGAN

Address on British Medicine.—More than twenty-five hundred Michigan doctors heard first hand observations of the present status of European medicine when Dr. Herbert Acuff, Knoxville, Tenn., president-elect of the International College of Surgeons, delivered the annual Biddle Oration. The address was presented before the annual session and Postgraduate Conference of the Michigan State Medical Society in Grand Rapids, September 21-24. Dr. Acuff recently returned from his second postwar visit to Europe.

Dr. Wilkinson Appointed to New York University.—Dr. Charles F. Wilkinson Jr., associate director of the Kellogg Foundation's Division of Medicine and assistant professor of medicine at the University of Michigan Medical School, Ann Arbor, has been appointed professor and chairman of the department of medicine at the Post-Graduate Medical School, New York University-Bellevue Medical Center. Dr. Wilkinson will be director, Fourth Medical Division, Bellevue Hospital, and also director of the department of medicine at University Hospital. Dr. William S. Tillett remains as professor and chairman of the department of medicine, New York University College of Medicine and director of the Third Medical Division, Bellevue Hospital. Dr. Wilkinson acted as coordinator of graduate medical education at the University of Michigan Medical School, Ann Arbor, from 1946 to 1948. With the Kellogg Foundation he was in charge of the development of programs to improve instruction for physicians in rural, nonteaching hospitals. Dr. Wilkinson served in the Medical Corps of the U. S. Army from 1940 to 1946 and was awarded the Bronze Star Medal. He has served as assistant professor of internal medicine at the University of Michigan Medical School and research fellow at University Hospital, Ann Arbor. He took his internship and residency at the same hospital following graduation from Emory University School of Medicine, Atlanta, in 1937.

MISSOURI

Additions to Medical Center.—Construction of a $900,000 building for research in the basic sciences related to cancer has been started in the Washington University Medical Group. The new building will connect the north and south buildings of the School of Medicine. Two other buildings were previously announced as additions to the medical center: one, the million dollar David P. Wohl Memorial Hospital, and the other, a new Barnard Free Skin and Cancer Hospital, for which funds will come from the sale of the present Barnard Hospital at 3427 Washington Avenue and from private gifts.

NEW MEXICO

Two Human Cases of Plague.—On August 3, a case of plague in a 10 year old boy was reported in Cerro, Taos County, N. Mex., with onset on July 29. Later a case was reported in a 37 year old man, in Sandoval County. These are the first reports of plague in human beings in the state, but the infection was found in fleas from prairie dogs in Taos County in April of this year, in Sandoval County in June of this year and in fleas from grasshopper mice in May of 1943. Dr. Crawford H. Douthirt, director of County Health Administration for the New Mexico Department of Public Health, reports that the 10 year old boy has recovered and that the Sandoval County man is getting along satisfactorily.

TEXAS

Industrial Health Conference.—The Texas State Department of Health in cooperation with the Houston Chamber of Commerce and other agencies is sponsoring an Industrial Health Conference in Houston October 6-7 at the Rice Hotel. The conference is designed for industrial physicians, nurses, safety engineers and public health workers. The program, which begins at 2 p. m., is as follows:

Mr. Manfred Bowditch, New York, Industrial Health Programs Pay Dividends.
Allan J. Fleming, Wilmington, Del., Present Status of Industrial Toxicology and Its Application.
Allen D. Brandt, D.Sc., Bethlehem, Pa., Control of Environmental Industrial Health Hazards.
Shields Warren, Boston, Industrial Health in an Atomic Era.
Sherman S. Pinto, Denver, Medical and Safety Aspects of Some Heavy Metals.
F. Ruth Kahl, R.N., Washington, D. C., Role of the Nurse in the Industrial Health Program.
Helmuth H. Schrenk, Ph.D., Washington, D. C., Public Health Aspects of Atmospheric Pollution.
Don D. Irish, Ph.D., Midland, Mich., Safe Use of Common Chemicals in the Plant and in the Home.
Paul R. Hawley, Chicago, Management's Responsibility for Prepaid Medical and Hospital Plans.

VERMONT

University Appointment.—Dr. William G. Young, recently of Hartford, Conn., has been appointed assistant professor of psychiatry in the college of medicine at the University of Vermont, where he will be in charge of the mental hygiene clinics. Dr. Young received his M.D. degree from the University of Toronto Faculty of Medicine in 1930. He is a member of the American Board of Psychiatry and Neurology. He has been on the staffs of Massachusetts General Hospital, Boston; Toronto General Hospital, and the Institute of Living, Hartford, Conn., and was instructor in psychiatry at the College of Physicians and Surgeons, Columbia University, New York.

VIRGINIA

Stuart-McGuire Lectures.—The annual Stuart McGuire Lecture series and a symposium on hematology will be presented September 28-October 1 at the Egyptian Building of the Medical College of Virginia, Richmond. Sir Lionel E. H. Whitby, regius professor of physic, University of Cambridge, England, will present three lectures at 8:30 p. m.: "The Physiology of Hemopoiesis," "Dyshemopoiesis from Nutritional and Specific Deficiencies" and "Dyshemopoiesis from Noxious Agents." Out-of-state physicians who will speak at the symposium are as follows:

William P. Murphy, Boston, Treatment of Pernicious Anemia.
Louis K. Diamond, Boston, Anemias Resulting from Rh Incompatibility.
Thomas H. Ham, Boston, Acquired Hemolytic Anemia.
Armand J. Quick, Milwaukee, Prothrombin.
Nathan Rosenthal, New York, Types of Leukemia.
Frank H. Bethell, Ann Arbor, Mich., Anemias of Pregnancy.
David A. Karnofsky, New York, Clinical Application of Nitrogen Mustards.
Cyrus C. Sturgis, Ann Arbor, Mich., Use of Iron in Anemia.
Thomas Fitz-Hugh Jr., Philadelphia, Leukopenia.
C. Lockard Conley, Baltimore, Myelomatosis.
Francis H. L. Taylor, Ph.D., Boston, Recent Advances in Hemophilia.
Charles A. Doan, Columbus, Ohio, New Methods in the Treatment of Leukemia.
Donald W. Bortz, Cleveland, Treatment of Polycythemia.

A charge of $15 a day will be made for the series except to members of the faculty and students of the Medical College of Virginia and the University of Virginia and to all members of the house staff of any hospital.

WEST VIRGINIA

Appoint Liaison Committee.—Dr. Delivan A. MacGregor, Wheeling, and Dr. Frank V. Langfitt, Clarksburg, will serve as chairman and co-chairman, respectively, of a liaison committee between the West Virginia State Medical Association and the Board of Governors of West Virginia University. Dr. Frank J. Holroyd of Princeton has been named the third member. One of the prime objects of the committee is to establish closer relations between the association and the board of governors and a better understanding of the needs of the medical profession, especially in the field of medical education.

Special Society Elections.—The following special societies held meetings in conjunction with the West Virginia State Medical Association early in August and selected officers: The West Virginia Society of Anesthesiologists chose Drs. John F. Morris, Huntington, president, and Arkie B. Bowyer, Charleston, secretary-treasurer. The West Virginia Obstetrical and Gynecological Society chose Drs. Charles L. Goodhand, Parkersburg, president and Clarence H. Boso, Huntington, secretary-treasurer. The Association of Pathologists of West Virginia elected Drs. Marshall W. Sinclair, Bluefield, president, and Milford L. Hobbs, Morgantown, secretary-treasurer. ——The West Virginia Heart Association chose Drs. John E. Stone of Huntington as president and Wade H. Rardin, Beckley, treasurer; Dr. W. Frederick Richmond, Beckley, was reelected secretary. The House of Delegates of the State Medical Association voted to accept the scientific assembly of the State Heart Association as an affiliate, instead of the heart association itself. The change was made because, under the reorganization plan, laymen are admitted to membership in the heart association on an equal basis with members of the medical profession.

GENERAL

Diabetes Week.—The American Diabetes Association is sponsoring a diabetes week October 10-16. This is a continuation of the program inaugurated last year, when Diabetes Detection Week was observed December 6-12. The drive is meant to concentrate attention on testing urine of patients either in doctors' offices or in detection centers.

Medical Art Reception and Tea.—The International College of Surgeons will entertain at a reception and tea October 23 at 3 p. m. at the home of the college, 1516 Lake Shore Drive, on the occasion of the unveiling of the portraits of its presidents and the presentation of works of medical arts and sculpture of Dr. Skevos Zervos, Athens, Greece. In the evening the college will hold a banquet at the Blackstone Hotel.

Mileage Death Rate at All-Time Low.—The National Safety Council reported August 31 that for the first six months of 1949 the mileage death rate on the nation's streets and highways was 6.8. This is not only an all-time low mark but the first time in the history of such records that a half-year rate has been below 7 deaths per 100,000,000 vehicle miles. The toll of lives at the end of seven months was 16,540, 1 per cent under the 16,700 death toll at the end of July last year.

Dr. Thompson Wins Hess Prize.—Dr. Howard T. Thompson, University of Rochester (N. Y.) School of Medicine and Dentistry, is winner of the Elmer Hess Prize, awarded through the Northeastern Section of the American Urological Association. The award carries with it a cash prize of $100 and presentation of the awarding paper before the society at Lake of Bays, Ontario, Canada, early in September. His report is on animal experiments in which the ureters were transplanted into an isolated sigmoid loop of the bowel, which was later used to replace the bladder.

Warning to Hospitals and Physicians.—Mount San Rafael Hospital, Trinidad, Colo., reports that a man about 42 is likely to make application, through some Jewish organization, for medical care and hospitalization for a pulmonary condition. He is said to claim that he is a fireman in the Merchant Marine, that he was held as a Japanese prisoner during the war and that he has a fungous infection of the lung for which he has been operated on. He has a scar on the posterior chest wall and a smaller scar on the anterior surface of the chest. He is about 5 feet 6 inches (168 cm.) tall, weighing about 150 pounds (68 Kg.), has black, short-cropped hair tinged with gray and has rather prominent nostrils; his nose appears to have been broken and poorly set, and his teeth are irregular. He talks with a slight lisp and definite accent, is well dressed and is a convincing talker. He states that he is without sufficient funds to pay the hospital bill until he can get in touch with his bank and offers checks in payment of his bills; he also is likely to offer a sum of money in the form of a check as a contribution to the hospital. These checks are returned with the statement "no such bank." This man is evidently traveling over the country. If he is contacted, notify the District Attorney's Office, Trinidad, Colo.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

Division and State	Week Ended Sept. 10, 1949	Week Ended Sept. 11, 1948	Median Expec.	Jan. 1 to Sept. 10, 1949	Jan. 1 to Sept. 11, 1948	Total * March 19 to Sept. 10, 1949	Total * March 20 to Sept. 11, 1948
New England States:							
Maine	47	9	5	308	28	308	28
New Hampshire	18	3	3	131	13	131	13
Vermont	21	1	2	78	15	76	14
Massachusetts	145	13	30	1,076	111	1,076	108
Rhode Island	10	1	1	77	1	77	1
Connecticut	43	7	9	334	69	331	68
Middle Atlantic States:							
New York	336	95	101	3,449	696	3,420	660
New Jersey	105	50	50	808	371	772	364
Pennsylvania	77	51	51	424	362	414	351
East North Central States:							
Ohio	178	79	79	1,070	618	1,064	609
Indiana	68	33	28	753	229	743	219
Illinois	191	71	87	1,995	316	1,979	309
Michigan	196	57	55	1,780†	326	1,760†	320
Wisconsin	82	48	20	598	238	584	238
West North Central States:							
Minnesota	128	101	48	1,207	558	1,168	550
Iowa	75	81	25	768	462	755	449
Missouri	75	32	31	993	150	982	150
North Dakota	23	8	7	364	73	260	73
South Dakota	44	10	2	248	103	226	103
Nebraska	60	56	11	355	261	342	356
Kansas	47	31	13	494	169	468	166
South Atlantic States:							
Delaware	2	7	6	35	104	33	103
Maryland	5	7	7	110†	39	101†	38
District of Columbia	11	13	4	59	73	58	73
Virginia	21	46	30	211	335	201	333
West Virginia	27	28	9	254	106	247	101
North Carolina	4	111	11	163	2,007	136	1,983
South Carolina	3	20	4	72	278	59	270
Georgia	24	12	4	138	163	130	162
Florida	12	9	4	167	185	146	168
East South Central States:							
Kentucky	41	12	12	394	131	386	128
Tennessee	32	13	13	371	229	365	222
Alabama	12	13	5	171	141	158	129
Mississipp	28	12	9	248	99	237	97
West South Central States:							
Arkansas	34	7	7	794	102	783	100
Louisiana	6	8	7	158	93	146	87
Oklahoma	86	37	10	957	271	950	265
Texas	65	57	25	1,734	1,365	1,643	1,344
Mountain States:							
Montana	13	7	6	46	41	45	31
Idaho	28	2	2	324	86	311	59
Wyoming	8	5	3	76	61	76	61
Colorado	77	12	12	405	69	403	67
New Mexico	7	3	3	115	52	114	50
Arizona	6	9	1	112	81	101	80
Utah	12	2	2	122	39	106	36
Nevada	..	..	..	11	3	11	2
Pacific States:							
Washington	34	20	20	342	137	297	119
Oregon	17	12	11	123	78	107	62
California	121	205	30	1,439	2,246	1,150	2,314
Total	2,705	1,526	.....	26,461	14,183	25,545	13,833
Median, 1944-1948	.....	.....	1,498	10,972		10,709	

* Last two columns show reported incidence since approximate seasonal low: 25 weeks.

† Corrections (made in cumulative totals): Michigan—Deduct 1 case each week ended August 20 and August 27. Maryland—Add 18 cases, onsets in July and August, weeks not specified.

Academy of Ophthalmology and Otolaryngology.—The annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 9-14, under the presidency of Dr. Conrad Berens, New York. At the joint session on Monday Sir Stewart Duke-Elder, London, England, will speak on "The Physiology of the Intraocular Fluids and Its Clinical Significance." Invited speakers for the symposium on allergy are Dr. John M. Sheldon, Ann Arbor, Mich., who will speak on "Immunologic Aspects of Allergy" and Dr. Samuel M. Feinberg, Chicago, "Drugs in Allergy." Section meetings in otolaryngology and ophthalmology will follow. The Jackson Memorial Lecture will be given Wednesday morning by Dr. William L. Benedict, Rochester, Minn., on "Diseases of the Orbit," and in the afternoon Dorothy Wolff, Ph.D., New York, will deliver the Wherry Memorial Lecture on "Vascular Pathology in the Temporal Bone." At the dinner Wednesday at 7 p. m. Sir Stewart Duke-Elder will speak on the national medical service in England.

Cerebral Palsy Clinics.—Dr. Meyer Perlstein of Chicago held cerebral palsy clinics for the Michigan Society for Crippled Children in Jackson September 20, and will hold others in Battle Creek October 18-20. He will also hold clinics for the medical society in Portland, Ore., September 26 and will take part in the dedication of a new school for crippled children in Eugene, Ore., September 27. He will hold cerebral palsy clinics for the Idaho Society for Crippled Children and the Idaho Medical Society in Boise September 28-29 and for the University of Idaho in Pocotella on September 30.

International College of Surgeons.—The United States Chapter of the International College of Surgeons will hold its assembly at Haddon Hall, Atlantic City, November 8-11 under the presidency of Dr. Custis L. Hall, Washington, D. C. The meeting will be preceded by surgical clinics in Philadelphia Hospitals November 7. In addition to numerous papers to be presented at the general assembly, there will be section meetings on urology and eye, ear, nose and throat. Convocation will take place November 10, and the meeting will be addressed by Dr. Elmer L. Henderson, Louisville, Ky., President-Elect, American Medical Association, and Dr. George F Lull, Chicago, Secretary-General Manager, American Medical Association. The presidential address will be delivered at the banquet November 11 at 7:30 p. m.

Survey of Japanese Exposed to Atomic Bomb.—The committee on ophthalmology of the National Research Council has chosen Dr. David G. Cogan, director of the Howe Laboratory of Ophthalmology and associate professor of ophthalmology at Harvard Medical School, Boston, and Dr. S. Forrest Martin, assistant surgeon at the Massachusetts Eye and Ear Infirmary, Boston, to conduct a survey of persons who were exposed to the atomic bomb explosions at Nagasaki and Hiroshima. The project is to last three months, beginning September 3, when Dr. Cogan and Dr. Martin flew to Japan. According to the National Research Council, impetus has been given to this study in recent months because of the finding of cataracts in a number of persons who were and are working with cyclotrons and other radiant-energy producing processes.

Meeting of Gastroenterologists.—The National Gastroenterological Association will hold its scientific session at the Sommerset in Boston, October 24-26. Among the speakers will be Drs. Owen H. Wangensteen, Minneapolis; Frank H. Lahey, Maxwell Finland and William B. Castle, Boston; George Crile Jr., Cleveland, and John M. T. Finney Jr., Baltimore. Lord Alfred Webb-Johnson, president of the Royal College of Surgeons, London, England, will be a guest of honor at the banquet Tuesday evening, and the winner of the association's 1949 prize award contest for the best unpublished contribution on gastroenterology or an allied subject will receive the prize of $100 and a Certificate of Merit. On October 27-29 the association is sponsoring a course in gastrointestinal surgery at Boston City Hospital. Information may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23.

CORRECTION

"Treatment of Paraplegia Resulting from Trauma to Spinal Cord."—Dr. L. W. Freeman, author of the article by this title in The Journal, July 23, 1949, writes that the sentence on page 1017, first column, twenty-eighth line, should read as follows: It is certainly not true that burning pain "dies out"[48] and that cordotomy is unsuccessful in its relief.[50]

Marriages

Richard Walter Gentry, San Bernardino, Calif., to Miss Marjorie Ann Wilson of Lebanon, Ore., in San Francisco, June 18.

Thomas Jefferson Anderson Jr., Greensboro, Ala., to Miss Betty June Kilpatrick of Atlanta, July 19.

Nicholas N. Petrochko, Olyphant, Pa., to Miss Helen Dobrian of Albany, N. Y., July 16.

H. P. Hanna to Miss Berdie Ruth Watson, both of Birmingham, Ala., August 1.

Byron F. Harper, Atlanta, to Miss Rose Marie Raining of St. Louis, July 30.

Deaths

Henry Charles Barkhorn ⊕ Newark, N. J.; born in 1885; Cornell University Medical College, New York, 1907; past president of the Essex County Medical Society, the Practitioners Club of Essex County, the Doctors Club and the Cornell Medical Alumni Association; active in the functions of the state medical society, serving many years as chairman of its publication committee; treasurer from 1922 to 1935, past vice president, president, chairman of the public health and education committee and for many years chairman of the board of trustees of the Academy of Medicine of Northern New Jersey, which in 1944 presented him with its Edward J. Ill Award; served on the boards of the Welfare Federation and of the Essex County Tuberculosis League; fellow of the American College of Surgeons; affiliated with the Newark Eye and Ear Infirmary, Newark City Hospital, Newark Beth Israel Hospital, St. James Hospital, Babies' Hospital-Coit Memorial and Hospital of St. Barnabas and for Women and Children in Newark, Essex County Hospital for Contagious Diseases, Belleville, Fitkin Memorial Hospital, Neptune, Passaic (N. J.) General Hospital and the Hackensack (N. J.) Hospital; editor of the *Bulletin of the Essex County Medical Society* for twelve years; died July 27, aged 63, of coronary thrombosis.

Robert Vivian Funsten ⊕ Charlottesville, Va.; born in Portsmouth, Va., Dec. 25, 1892; University of Virginia Department of Medicine, Charlottesville, 1918; secretary of the Section on Orthopedic Surgery of the American Medical Association from 1935 to 1938, when he became vice chairman and chairman, 1939-1940; professor of orthopedic surgery at his alma mater; served on the faculty of the State University of Iowa College of Medicine in Iowa City from 1919 to 1922, following which he practiced in Detroit for ten years; served in France with the U. S. Army during World War I; specialist certified by the American Board of Orthopaedic Surgery; fellow and formerly vice president of the American Academy of Orthopaedic Surgeons; past president of the Virginia Orthopedic Association; member of the American Orthopaedic Association; affiliated with the Martha Jefferson Hospital and Sanitarium and the University of Virginia Hospital; member of the Council of Warm Springs Foundation; co-author of "Orthopedic Nursing"; died July 25, aged 56, of cerebral hemorrhage.

George Dunlap Lyman, San Francisco; born in Virginia City, Nev., Dec. 12, 1882; Columbia University College of Physicians and Surgeons, New York, 1909; lecturer in pediatrics, emeritus, Stanford University School of Medicine; member of the American Medical Association; fellow of the American Academy of Pediatrics; chief of the pediatric service at St. Luke's Hospital; on the visiting staffs of St. Mary's and Stanford University hospitals; past president of the California Historical Society; on the editorial board of *The Bulletin* of the San Francisco County Medical Society, serving as chairman of the society's committee on history and obituaries; author of "Care and Feeding of the Infant," published in 1915, second edition in 1922, "Saga of the Comstock Lode," which won the Commonwealth Club's gold medal in 1934; "John Marsh, Pioneer," published in 1930, and "Ralston's Ring," published in 1937; died July 26, aged 66, coronary artery disease and myocardial infarction.

John Augustine Conway ⊕ Hornell, N. Y.; born in Rexville, N. Y.; Jan. 21, 1874; University of Buffalo School of Medicine, 1903; Associate Fellow of the American Medical Association; fellow of the American Public Health Association; past president of the Steuben County Medical Society; past chairman of the public health section of the Medical Society of the State New York; during World War I served as epidemiologist with the rank of captain at Camp Humphries, Va.; on Jan. 1, 1946, resigned as district health officer with headquarters in Hornell, concluding thirty-one years' service in the state department of health; one of the first six physicians appointed to the department staff in 1914 under the title of "district sanitary supervisor," a position corresponding to "district state health officer"; for many years served the counties of Allegany, Chemung and Steuben; affiliated with St. James Mercy Hospital; died July 28, aged 75, of coronary disease.

Robert Lee Nourse ⊕ Boise, Idaho; born Cloverport, Ky., Sept. 27, 1864; Rush Medical College, Chicago, 1889; an Associate Fellow of the American Medical Association and in 1907 a member of its House of Delegates; secretary of the Idaho State Board of Medical Examiners from 1899 to 1905, when he became president of the Idaho State Medical Association; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; for many years medical examiner for the Civil Aeronautics Administration and the United Air Lines; on the staffs of St. Luke's and St. Alphonsus hospitals; died June 25, aged 84, of coronary occlusion with myocardial infarction.

Hagop G. Barsumian ⊕ Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1904; affiliated with Lancaster General Hospital, where he died June 27, aged 74, of coronary heart disease.

George Edward Black, Akron, Ohio; Eclectic Medical College, Cincinnati, 1909; member of the American Medical Association; served during World War I; affiliated with St. Thomas, City, Peoples, and Children's hospitals; died June 28, aged 62, of pulmonary embolism.

Guy Robert Blackburn ⊕ Fort Madison, Iowa; Chicago College of Medicine and Surgery, 1917; served on the staff of the Atchison, Topeka and Santa Fe Railway Employees Hospital, Topeka, Kan.; died June 20, aged 54, of cerebral hemorrhage.

Harvey M. Bourn, Tague, W. Va.; Eclectic Medical Institute, Cincinnati, 1891; died in Fort Pierce, Fla.; June 27, aged 87, of cardio vascular renal disease, arteriosclerosis and hypertension.

James Everette Burgman ⊕ Springfield, Ohio; Indiana University School of Medicine, Indianapolis, 1918; specialist certified by the American Board of Otolaryngology; fellow of the American Academy of Ophthalmology and Otolaryngology; served as a lieutenant commander in the Navy during World War I; died in the Appalachian Hall Hospital, Asheville, N. C., June 30, aged 54, of coronary thrombosis.

Leland L. Butcher Jr., Lebanon, Mo.; Harvard Medical School, Boston, 1947; certified by the National Board of Medical Examiners; interned at the Presbyterian Hospital in New York; served with Children's Hospital in Boston; drowned at Nantucket, Mass., June 19, aged 25.

Albert Edward Cobb ⊕ Canaan, Conn.; Yale University School of Medicine, New Haven, 1898; died in the Sharon (Conn.) Hospital June 30, aged 76, of mesenteric thrombosis.

Arthur John Denman, Narberth, Pa.; University and Bellevue Hospital Medical College, New York, 1913; member of the American Medical Association; served during World War I; died June 24, aged 61.

Thomas Yule Dorwart, Lexington, Neb.; Creighton University School of Medicine, Omaha, 1923; member of the American Medical Association; affiliated with Lexington Community Hospital; died June 18, aged 51, of cerebral hemorrhage.

Mirza Phillip Du Comb, Patoka, Ill.; Barnes Medical College, St. Louis, 1905; member of the American Medical Association; served on the staffs of Mark Greer Hospital in Vandalia and St. Mary's Hospital in Centralia; died June 12, aged 75, of coronary thrombosis.

Burton Wright Egan, Logansport, Ind.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; specialist certified by the American Board of Otolaryngology; served on the staff of St. Joseph's Hospital, where he died June 30, aged 72, of coronary occlusion.

John H. Gilligan, Green River, Wyo.; American Medical College, St. Louis, 1882; died June 30, aged 92, of pneumonia.

Thomas Paunall Govan, Pawhuska, Okla.; University of Louisville (Ky.) Medical Department, 1910; served during World War I; affiliated with the Pawhuska Municipal Hospital; died in Research Hospital, Kansas City, Mo., June 29, aged 70, of carcinoma.

Robert Bruce Greer ⊕ Butler, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; past president of the Butler County Medical Society; fellow of the American College of Surgeons; surgeon emeritus of the Butler County Memorial Hospital; consulting surgeon, Pennsylvania Railroad and Baltimore and Ohio Railroad; chairman emeritus and for twenty-nine years chairman of the Butler County Chapter of the American Red Cross; died June 17, aged 74, of pneumonia.

William Smith Gregory, New York; New York Homeopathic Medical College and Flower Hospital, New York, 1911; died May 16, aged 60.

George Gullotta, Corona, N. Y.; Regia Universita degli Studi di Roma, Facolta di Medicina e Chirurgia, Italy, 1936; member of the American Medical Association; served during World War II; died June 20, aged 41.

Robert J. Heffley, Berlin, Pa.; Medico-Chirurgical College of Philadelphia, 1898; member of the American Medical Association; died May 8, aged 77, of cerebral thrombosis.

William Joseph Hemphill, North Loup, Neb.; the Hahnemann Medical College and Hospital, Chicago, 1902; member of the American Medical Association; died in Omaha June 11, aged 75, of heart disease.

Ella Allen Hollis, Santa Barbara, Calif.; Medical College of Indiana, Indianapolis, 1890; died May 20, aged 91, of congestive heart failure.

Todd William Keith ⊕ Harrisville, W. Va.; University of Louisville (Ky.) School of Medicine, 1916; formerly county health officer and county coroner; served during World War I; affiliated with St. Joseph Hospital in Parkersburg, where he died June 21, aged 66, of coronary occlusion.

Englebert August Ketterer, Montfort, Wis.; Northwestern University Medical School, Chicago, 1903; served during World War I; affiliated with Dodgeville General Hospital and St. Joseph Hospital, Dodgeville, where he died June 29, aged 71, of coronary occlusion and myocardial infarction.

John C. Lardner, Fort Scott, Kan.; Kansas Medical Department, Medical Department of Washburn College, Topeka, 1902; member of the American Medical Association; served during World War I; at one time affiliated with the Veterans Administration in Oklahoma City; died in Mercy Hospital June 28, aged 82, of arteriosclerosis.

G. Carville McCormick, Tampa, Fla.; University of Maryland School of Medicine, Baltimore, 1890; member of the American Medical Association and the Medical and Chirurgical Faculty of Maryland; died in the Municipal Hospital June 19, aged 84, of arteriosclerotic heart disease.

Joseph J. Meredith, Cleveland; Missouri Medical College, St. Louis, 1893; member of the American Medical Association and the Missouri State Medical Association; died June 10, aged 84, of arteriosclerosis.

John Wesley Munro, Syracuse, N. Y.; University of Buffalo School of Medicine, 1903; died in the People's Hospital June 15, aged 72, of coronary thrombosis.

Thomas Albert Neal ⊕ Orlando, Fla.; Atlanta College of Physicians and Surgeons, 1903; died June 22, aged 74.

Elmer Harper Noel, Memphis, Tenn.; University of Arkansas School of Medicine, Little Rock, 1941; interned at St. Luke's Hospital in Duluth, Minn.; served during World War II; died in the Kennedy Veterans Hospital June 26, aged 37, of traumatic myelopathy and bilateral pyonephrosis.

Arthur Herman Pannenborg ⊕ Chicago Heights, Ill.; University of Louisville (Ky.) Medical Department, 1904; formerly city alderman, city commissioner and city health officer; affiliated with St. James Hospital, where he died June 30, aged 69, of cerebral thrombosis.

Arthur Douglas Parker, Norfolk, Va.; Columbia University College of Physicians and Surgeons, New York, 1921; served in the U. S. Naval Reserve during World War II; affiliated with the Norfolk Venereal Disease Clinic; served on the staffs of Norfolk General Hospital, Norfolk Memorial Hospital and at St. Vincent's Hospital, now known as De Paul Hospital, where he died June 18, aged 52, of coronary thrombosis.

Ray Howard Parker ⊕ Hunnewell, Mo.; St. Louis College of Physicians and Surgeons, 1917; affiliated with Levering Hospital; served during World War I; a member of the board of education and board of health; died in Blessing Hospital, Quincy, Ill., June 14, aged 60, of carcinoma.

Frank Byron Perkins, Manchester, N. H.; Dartmouth Medical School, Hanover, 1877; member of the American Medical Association; died June 21, aged 93.

William H. Pickett, Louisville, Ky.; Louisville National Medical College, Medical Department State University, 1898; died in the Red Cross Hospital June 24, aged 74.

Joseph Price ⊕ Morgan, Utah; Columbia University College of Physicians and Surgeons, New York, 1915; member of the Medical Society of the State of New York; during World War I served overseas with the medical corps of the U. S. Army; at one time practiced in New York City, where he was medical consultant to the Consolidated Edison Company and Bendix Aviation, and on the staffs of Lutheran, St. Elizabeth's, St. Clare's, City and Gouverneur hospitals; died in St. Benedict's Hospital, Ogden, July 12, aged 57, of coronary thrombosis.

James Joseph Purtell ⊕ Wauwatosa, Wis.; Marquette University School of Medicine, Milwaukee, 1940; served in the U. S. Naval Reserve during World War II; affiliated with Misericordia Hospital in Milwaukee and Milwaukee County Hospital; president of the Marquette University Medical School Foundation; died June 18, aged 36, of a skull fracture received in an automobile accident.

Richard Andrew Reiss ⊕ Senior Assistant Surgeon, U. S. Public Health Service, New York; Long Island College of Medicine, Brooklyn, 1946; commissioned in the public health service in July 1948, when he became deputy chief of internal medicine at the Public Health Service Outpatient Clinic in San Pedro, Calif.; certified by the National Board of Medical Examiners; killed near Galesburg, Ill., June 26, aged 27, in an automobile accident while enroute from California to Framingham, Mass., where he was to take up a new assignment.

Wilbur Berry Roads ⊕ Hillsboro, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; served as chief of staff of Highlands Community Hospital; died June 17, aged 68, of coronary thrombosis.

Alfred Elijah Perkins Rockwell ⊕ Shrewsbury, Mass.; Boston University School of Medicine, 1899; died in the Memorial Hospital, Worcester, June 19, aged 79, of carcinoma of the rectum with metastases to the liver.

Morris Rubinstein ⊕ Whipple, Ariz.; Fordham University School of Medicine, New York, 1920; member of the Medical Society of the State of New York, American Trudeau Society and the American Society of Physical Medicine; chief of physical medicine at the Veterans Administration Center; died June 21, aged 53, of coronary occlusion.

William Henry Rumpf, Faribault, Minn.; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1891; member of the American Medical Association; affiliated with St. Lucas Evangelical Deaconess Hospital; died June 26, aged 82, of chronic hypertensive heart disease.

Clarence Frederick Schubert ⊕ San Francisco; Johns Hopkins University School of Medicine, Baltimore, 1941; member of the Ohio State Medical Association; died in June, aged 43, of cardiac failure, hypertension and tuberculosis.

Morris Carlton Snitkoff ⊕ Brooklyn; Cornell University Medical College, New York, 1931; assistant physician at Jewish Hospital; served during World War II; died June 2, aged 43, of brain tumor.

William Edgar Stewart, Portland, Ore.; Rush Medical College, Chicago, 1905; served in France during World War I; died in Emanuel Hospital June 26, aged 69, of arteriosclerotic heart disease.

William Howard Thomas, Jacksonville, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914; died June 10, aged 60.

Claude Tyson Vickers, Winnsboro, Texas; Atlanta College of Physicians and Surgeons, 1913; died June 17, aged 66, of cerebral hemorrhage.

Ray Marcus Waltz, Salem, Ore.; University of Oregon Medical School, Portland, 1916; member of the American Medical Association; died in Salem Memorial Hospital, June 2, aged 62, of cerebral hemorrhage.

Charles Wallace Webb, Newark, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1909; member of the American Medical Association; for many years medical director of the Newark (N. Y.) Hospital; formerly associated with the Clifton Springs (N. Y.) Sanitarium; served as surgeon at Newark State School; died July 6, aged 71, of coronary disease.

Frederic Beall West, Los Angeles; Barnes Medical College, St. Louis, 1899; died in June, aged 79.

James Franklin Whitwell ⊕ Buffalo; University of Buffalo School of Medicine, 1890; past president of the Erie County Medical Society; member of the Buffalo Academy of Medicine; for many years affiliated with Deaconess Hospital, where he died June 17, aged 82, of arteriosclerotic heart disease.

Edward Denison Williams, Easthampton, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; vice president and member of the board of directors of the First National Bank, of which he had been president for many years; on the staff of the Cooley Dickinson Hospital, Northampton, where he died June 25, aged 80, of arteriosclerosis and hemiplegia.

William Caldwell Wilson, Warren Center, Pa.; Columbia University College of Physicians and Surgeons, New York, 1900; veteran of the Spanish-American War and World War I; died in the Veterans Administration Hospital, Staten Island, N. Y., June 17, aged 74.

Mara Lois Smith Wingate, Shaker Heights, Ohio; Cleveland University of Medicine and Surgery, 1897; died in St. Luke's Hospital, Cleveland, June 25, aged 83, of respiratory failure and traumatic shock.

John P. Yeargain, Irondale, Mo.; Barnes Medical College, St. Louis, 1904; member of the American Medical Association; served on the staff of Bonne Terre (Mo.) Hospital; for many years member of the board of education; vice president of the Irondale Bank; died June 17, aged 73, of cerebral hemorrhage.

Foreign Letters

ITALY

(From Our Regular Correspondent)

FLORENCE, July 30, 1949.

Intraosseous Anesthesia by Means of Thiopental Sodium

Before the Neapolitan Surgical Society Professor Majone reported on research carried out by him and Dr. Larusso to demonstrate the occasional damage inflicted on the blood and bone marrow by thiopental sodium (pentothal sodium®) when used for intraosseous anesthesia.

The results of numerous experiments were as follows: 1. There were no noteworthy changes in the hemoglobin, while the red blood corpuscles were slightly diminished and the white corpuscles showed a definite and progressive increase, with the maximum reached at the second hour after the start of the experiment. A percentual increase in polymorphonuclear cells was observed simultaneously. 2. The study of the bone marrow demonstrated changes consisting mainly in an increase in all the immature elements and particularly in those of the white series. This increase reached its maximum within three hours. Noteworthy is the increase in histoid elements and in reticuloendothelial cells. 3. The processes which, in chronologic order, characterized the damage done to the marrow were proliferation of the medullary elements, hemorrhage, edema and cellular atrophy. There may be observed also regression and degeneration of the megakaryocytes, hyaline degeneration of the tissues supporting the bone marrow and dilatation of the vessels with thickening of the walls. 4. Changes observed with regard to the bones included hemorrhagic extravasation of the spongy tissue and regressive processes of the cartilage of conjugation. 5. All the changes observed are completely reversible. Those concerning the hematic and peripheral crasis receded after twelve to twenty-four hours; the histologic changes of the marrow and of the bones were restored to normal after two months. 6. Because the lesions of the bones and of the marrow occur only in the area where the injection was made and because they are reversible, they do not contraindicate the use of intraosseous anesthesia with thiopental sodium.

Obstetric and Gynecologic Society

The Lombardic Obstetrical and Gynecologic Society met under the chairmanship of Professor Vercesi. Professor Fumagalli of Milano presented new points of view on the structure of the genital passages of women. He discussed the architecture of the tunica muscularis of the fallopian tube and of the uterus based on data collected in research carried out by him and his co-workers. Concerning the fallopian tube, the speaker demonstrated that the most recent morphologic reports are the only ones to justify the peculiar contractile activity of this organ which has been demonstrated on roentgenologic examination.

Concerning the myometrium, the speaker criticized the concept according to which the smooth musculature is made up by bunches of spiral fibers; he then demonstrated that, in pregnancy as in the uterus at rest, the musculature has a disposition to lamellae, relatively independent from one another, which can slip one over the other, thus determining the enlargement of walls of the organ without the occurrence of tension of the muscular elements and without disturbance of the basal architecture.

In discussing recent research on the structure of the vessels of the endometrium and myometrium in the menstrual cycle, the speaker stressed the vascular phenomena in the various phases of the cycle. He concluded that the myometrium offers an answer to the two concepts, that of a regulatory organ of the vascular hydrodynamics and that of an organ with mechanical function (with tension and expulsion of the fetus).

Professor Giudici presented a preliminary report on the relation of estrus-producing compounds and progesterone and the contractile function of the myometrium.

He discussed the histologic observations of the effect of the ovarian hormones in relation to dose, to chemical structure, to the duration of their administration to guinea pigs during the period preceding puberty, to adult and to castrated animals, in the various phases of the estrual cycle. The results justify consideration of the possibility of direct action of the two hormones (estrus-producing compounds and progesterone) on the contractility of the myometrium and a new hypothesis concerning the origin of fibromyomas, which may not be neoplasms but dysplasias conditioned by a lack of equilibrium between the estrus-producing and luteinic hormones.

Siliotti reported on the structure of the intraparenchymatous arteries and on some basal formations of the network in fibrosclerosis of the uterus.

Moschino made a contribution to the study of the segmentary innervation of the uterus by discussing the characteristic relation between the female genital apparatus and single segments of the cerebrospinal and of the vegetative system. He also discussed the parasympathetic innervation of the female genital apparatus.

PARIS

(From Our Regular Correspondent)

Aug. 10, 1949.

Twelfth Congress of French-Speaking Pediatrists

More than 600 pediatrists, representing eighteen nations, attended the Twelfth Congress of French-Speaking Pediatrists which was held in Paris, June 1-3, 1949, under the presidency of Professor Lesne, vice president of the National Academy of Medicine.

Nurslings' toxicosis was the most important subject on the agenda. After explaining the various theories, J. Levesque, R. Bastin and J. Lafourcade (Paris), in their study of the etiologic aspects, especially considered the toxic conditions connected with parenteral infections and otomastoiditis. Cathala (Paris) agrees with Levesque on the general conception of toxicosis, but differs with him with respect to certain nosologic identities. He thinks that intervention is justified if it is known, or believed, that otomastoiditis is the cause of a neurotoxic condition. J. Chaptal, D. Brunel and their co-workers (Montpellier) found in 58 cases of toxicosis that the frequent causes were otomastoiditis (30 cases) and infections of the digestive system. G. Lefebvre (Lille) stressed the part played by intestinal bacteria. R. Clement, J. Gerbeaux and their co-workers (Paris) were able to isolate salmonellas (B, C and D groups) twenty-two times, paracolibacilli six times and colibacilli four times. These organisms were frequently found in metastatic localizations.

G. Mouriquand, N. Boulez and D. Dechavanne (Lyons), on the strength of 165 observations, said that human milk affords protection against the disease. Levesque and others have emphasized that weaning is an important factor. Procaine hydrochloride, intravenously administered, has sometimes produced unexpected results.

In a special study, Fanconi (Zurich) stressed the importance of urinalysis and blood studies for diagnosis and treatment. His treatment comprises the rapid hydration by continuous intravenous drip (two to four days) of a solution containing equal parts of isotonic sodium chloride solution and glucosed serum, followed by a transfusion of blood plasma and anti-infectious and hepatoprotective treatment. The author said that he never had to resort to antrotomy and that the majority of nurslings may be saved. Frontali (Rome) observed the constant reduction of the alkaline reserve and the great frequency of hypopotassemia in 30 cases. G. M. Guest and S. Rappoport (Cincinnati) also noted the importance of study of the p_H and the concentration of cellular potassium, the modifications of which occur simultaneously with those of the red blood corpuscles. G. Lombroso (Genoa), in collaboration with Eliel and Nelson (Boston), was able to demonstrate experimentally, for the first time, the hypothesis to which, in the presence of an intracellular hypopotassemia, the extracellular sodium cation would set at work the maintenance of the osmotic pressure. Julien Marie (Paris) and his co-workers made the hepatosteatosis syndrome the subject of a special study and in 49 cases were able to note the prognostic value of the prothrombin rate. In 6 cases of hepatosteatosis, they noted exocrinian and endocrinian lesions of the pancreas and, above all, the rarefaction and even sometimes the disappearance of A cells and Langerhans' islands; they have connected those facts with hepatic steatosis; they associate pancreatic extract with the treatment of hepatic deficiency. Bernheim and J. Lanternier (Lyons) emphasized that hydration must be accompanied by an increase in the blood mass; in 81 cases, the mortality rate was lowered from 78 to 45 per cent by a massive perfusion of blood, associated with intravenous administration of procaine hydrochloride.

In a report of their anatomic and radiologic study, R. A. Marquezy and P. Renault (Paris) pointed out that the mechanism of bronchiectasis is still not understood. Delarue considers nervous incitations responsible, and Ameuille, Mezard and Lemoine have demonstrated the part played by thrombosis of the bronchial artery. J. Sloof (Eindhoven, Holland) emphasized the necessity of searching for bronchiectasis in all children with cough for over two months. He does not consider operation advisable before the age of 15 years. In his large experience at the Climatic Centre of Dieulefit, Preault has noted that the bronchorrheic syndrome does not always imply that there are real bronchial dilatations. Of 70 cases of lobar opacity, in 53 there were dilatations of the middle lobe and in 17 of the inferior lobe. R. Turpin, J. M. Lemoine and P. Chassagne (Paris) have twice observed a new dysmorphic syndrome of associated bronchiectasis, mega-esophagus and costal vertebral anomalies. This apparently frequent syndrome deserves a special place along with Kartagener's syndrome. The discovery is an argument in favor of bronchiectasis of congenital origin.

Intra-Arterial Blood Transfusion

Mallet-Guy's (Lyons) experimental work on 40 animals shows that in serious, agonal shocks arterial blood transfusion is superior to venous transfusion, which may provoke dilatation of the right side of the heart with compression of the left and complete collapse. At the same meeting of the Academy of Surgery, Welti (Paris) stressed that intra-arterial transfusion produces, at the same time, better vascularization of the coronaries. Santy's clinical experiments have shown in 4 cases, after the failure of intravenous transfusion, the excellent results of arterial transfusion performed with manometric control.

André Boivin Dies at 54

French biology and biochemistry have experienced a great loss in the death, at the age of 54, of André Boivin, member of the National Academy of Medicine and corresponding member of the Academy of Sciences. Having obtained a Rockefeller scholarship, he went to Strasburg, where he became the disciple of the eminent Professor Nicloux. He was one of the first in France to extract insulin from the pancreas. By his trichloracetic acid method, he succeeded in proving that certain antigens are not proteins but glucidolipid complexes, a discovery which permitted the preparation of much more active vaccines. In 1935 he returned from Bucharest to France, to work at the Paris Pasteur Institute. In 1946 he was appointed professor of biologic chemistry on the faculty of medicine of the University of Strasburg, where he began, together with Vendreley and Tulasne, a study of the chemical and cytologic structure of microbes and proved, by the effect of specific ferments, the existence of the bacterial nucleus. From this experimental data, he outlined a theory which, generally speaking, makes nucleic acid the substratum of acquired and hereditary characteristics. This theory has stimulated much research; it may lead to discoveries, as yet unexpected, in bacteriologic and genetic fields.

THE NETHERLANDS

(From Our Regular Correspondent)

Amsterdam, Aug. 2, 1949.

New Surgical Journal

In Holland, immediately after the war the surgeons did their utmost to overcome the lag caused by the occupation, when nearly all scientific work was hampered. Interest was greatest in anesthesia and surgery of the thorax. In Amsterdam, and soon also at Utrecht and Groningen, schools were founded for training in modern anesthesia. Among other things, in Amsterdam interesting research with the help of Professor Brinkman's reflectometer is in progress for the oxygen content of the blood during an operation; in this city a series of original and interesting observations by means of electrocardiographic examination during operations, principally in cases of congenital defects of the heart, were also made.

In the Laboratory for Experimental Surgery of the Amsterdam Surgical Clinic much work is being done on surgery of the thorax; tuberculosis of the lungs and various anomalies of the aorta are studied experimentally. A method was found for causing experimentally total stenosis of the isthmus of the aorta in a dog; experimental investigations of clinical problems regarding coarctation are now going on with these new methods.

A society has been founded in Holland that binds together the subdivisions of surgery. This society, formed by general surgeons, orthopedists, urologists, neurosurgeons and thoracic surgeons, among other events holds an annual congress where one subject is discussed and on which light is thrown by speakers from the subdivisions. The first congress, on surgical tuberculosis, was held in Amsterdam in 1948. Following an introductory lecture by a well known specialist in tuberculosis, a surgeon discussed surgical treatment of tuberculosis of the lungs with thoracoplasty; a second speaker amply defended extrapleural pneumothorax; extirpation of a lung was discussed; urologists discussed the surgical treatment of renal tuberculosis; two orthopedists defended, respectively, the operative and the conservative treatment of coxitis tuberculosa; and neurosurgeons gave accounts of their experience with the operative treatment of neurologic anomalies in spondylitis tuberculosa. The Dutch practitioners of the surgical sciences decided to record the results of their labor in a journal of their own, which is published in English, French and German, and therefore founded the *Archivum Chirurgicum Neerlandicum*.

Correspondence

EFFECTS OF SYMPATHETIC NERVOUS SYSTEM

To the Editor:—Dr. A. D. Jonas, in his discussion of the article "Some Effects of Myanesin on Psychiatric Patients" (J. A. M. A. **140**:1172 [Aug. 6] 1949), remarked: "For the last few years efforts have been made to prevent stimuli originating in the emotional centers of the central nervous system from reaching the effector organs" and, by inference, producing the anxiety state.

There are many reasons for believing that such stimuli arise in the sympathetic system itself and produce their effect on the central nervous system by regulating its blood supply. The fact that the sympathetic system is older developmentally is of interest.

Also, it is possible that "circulating epinephrine" is the mediator for the heart, sweat glands and the sympathetic nervous system of the brain. Thus the action of the agents would be to inhibit the formation of this mediator. If one further speculates that "circulating epinephrine" is a result of the activity of numerous materials liberated into the blood stream, among the most important of which are the products released by the chromaffin cells and the thyroid, one must conclude that an anticorticotropic and an antithyrotropic agent would represent physiologic antagonists.

The low metabolism of Cushing's syndrome and the underactive cortical function, which may well be just as important in toxic diffuse goiter as the hypertrophied thyroid (if iodine is not deficient), are examples of antagonism noted clinically. Thus a true adrenolytic or a true anticorticotropic agent would inhibit the chromaffin component and thereby relatively increase the thyroid component of "circulating epinephrine," with resultant increase in the anxiety state.

A true antithyrotropic agent by decreasing the thyroid component would in the same manner increase the chromaffin factor. Among other things, this would result in hypertension as is noted in functioning tumors of the chromaffin cells and as has been recorded following the intravenous use of *l*-norepinephrine (Goldenberg, M.; Pines, K. L.; Baldwin, E. DeF.; Greene, D. G., and Roh, C. E.: The Hemodynamic Response of Man to Nor-Epinephrine and Epinephrine and Its Relation to the Problem of Hypertension, *Am. J. Med.* **5**:792 [Dec.] 1948).

I submit that much of the knowledge concerning the function of the sympathetic nervous system is so vague that dogmatic opinions may tend to retard progress in this field.

I. M. Hay, M.D., Melbourne, Fla.

PSYCHODYNAMICS AND THE ALLERGIC PATIENT

To the Editor:—I would like to comment on the review of my book, "Psychodynamics And The Allergic Patient," in The Journal, July 2, 1949. While I realize that the reviewer has every right to state what he believes, I do not believe that he has the right to misrepresent what I explicitly stated in my book. With respect to perhaps the most important example of misrepresentation, the reviewer writes, "In the main, the author follows the usual line of proponents of the idea who claim that emotional and psychic elements can be the major and only factor in producing manifestations which resemble those produced by allergy." This is a misstatement both from the point of view which I presented in my book and what is actually stated. I quote what is actually written on page 25. "In practically all of the cases with bilateral, wheezing respiratory difficulties (excluding tumors, stenoses, et cetera) which I have seen, there was some plausible type of immunologic allergic or infectious basis. However, in the dermatoses, not infrequently there occur clinical entities similar to allergic responses where a true immunologic reaction cannot be unequivocally demonstrated."

Harold A. Abramson, M.D., New York.

DOES EXCHANGE TRANSFUSION PREVENT NEUROLOGIC SEQUELAE OF ERYTHROBLASTOSIS FETALIS?

To the Editor:—In our very first papers on the treatment of erythroblastosis by exchange transfusion, it was pointed out that the purpose of the procedure is to remove red cells coated with univalent Rh antibodies and to replace them by inagglutinable type Rh red blood cells. The validity of this rationale was established by the significant reduction in the immediate mortality rate for the disease following treatment by exchange transfusion. In addition, it was soon observed that the babies who survived developed normally both physically and mentally.

In erythroblastotic babies who survive, the most dreaded complication is mental retardation and other evidences of brain damage resulting from the disease. The incidence of neurologic sequelae following erythroblastosis has been reported in the literature as ranging from 10 to 30 per cent. Among our own patients treated by exchange transfusion, 23 have now survived more than eighteen months and up to three years. Of these, all but 1 could be located and were recently reexamined. All 22 children examined proved to be entirely normal. In contrast to this, among 25 other infants who had recovered after simple transfusion therapy, 4 exhibited mental retardation with athetosis and other manifestations characteristic of nuclear damage. These data are summarized in the accompanying table, together with data for 25 control patients of Zuelzer which survived after expectant treatment.

Neurologic Sequelae Among Erythroblastotic Infants Treated by Exchange Transfusion as Compared with Those Receiving Simple Transfusion Therapy

Method of Treatment	Total Number of Cases	Number with Neurologic Sequelae
Exchange transfusion (present report).....	22	0
Simple transfusion therapy (present report)	25	4
Simple transfusion therapy *................	25	8

* Zuelzer, W. W., in The Rh Factor: Practical Aspects, Round Table Discussion, J. Pediat. 1:799 (June) 1948.

A striking fact, also pointed out by Zuelzer, is that the occurrence of neurologic sequelae is not correlated with the severity of the manifestations during the neonatal period. Thus, 3 of our own patients with neurologic sequelae had originally been considered to be only mildly affected, and 2 had been discharged after having received single transfusions. It seems apparent, therefore, that all patients with serologically proved erythroblastosis due to Rh sensitization, no matter how mild the manifestations appear to be, should be treated without delay by exchange transfusion, not only to save life but also to prevent neurologic sequelae. The treatment must be instituted immediately after birth, and this can be accomplished with the aid of routine antenatal Rh tests and Rh antibody titrations of the serums of expectant Rh-negative mothers.

Until now the accepted practice has been to treat expectantly patients with erythroblastosis caused by A-B sensitization.

because in such cases the disease tends to be mild and recovery is often spontaneous (icterus precox). However, nuclear jaundice has occasionally caused death in such cases, and unpublished observations suggest that neurologic sequelae are disturbingly frequent among affected babies who survive. It may be that such patients should also be treated by exchange transfusion more often than is now the practice.

A. S. Wiener, M.D., Brooklyn.
I. B. Wexler, M.D., Brooklyn.
N. F. Gibbel, B.A., Brooklyn.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II*, New York City, Feb. 9-10. Address: Sec.-Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written* Various Centers, October 26. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

Arkansas: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado: * *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Illinois: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Minnesota: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Jefferson City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Montana: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City.

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe. Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

Ohio: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oregon: *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland.

Oklahoma: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

Rhode Island: * *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Tennessee: * *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

Wisconsin: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona: *Examination.* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Connecticut: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Minnesota: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Medical Economic Research

MEDICAL ECONOMIC REVIEWS AND ABSTRACTS

Prepared by the Staff of the Bureau of Medical Economic Research

Benefits of Group Practice: *The Kingsley Roberts Memorial Lectures:* 1948. Group Practice and Medical Education. By Alan Gregg, M.D. The Role of Medical Group Practice in the Changing Order. By George Baehr, M.D. Economic Aspects of Medical Group Practice. By C. Rufus Rorem, Ph.D., C.P.A. Paper. Pp. 40, with 1 portrait. Medical Administration Service, Inc., 1790 Broadway, New York 19, 1949.

This publication is a collection of three addresses on group practice by Alan Gregg, M.D.; George Baehr, M.D., and C. Rufus Rorem, Ph.D. The basic premise of the series is that a physician who does not practice in formal association with other physicians—including a full range of specialists—will be isolated from medical contacts and inaccurate in his diagnoses. An apparent corollary to this premise in the last two articles is that a physician must be a board member in order to practice good medicine. In reading these addresses, one is curious to learn just what position in the medical picture the authors would assign the general practitioner.

Although one must agree that group practice offers favorable features, it is difficult to believe there is any single solution to a problem with so many variables.

Dr. Gregg points out, amid some digression on social work, that during his clinical studies the student becomes aware of his "personal limitations" and "the handicaps of a practitioner working single-handed." He explains the advantages of groups such as those of the full time clinical department. By analogy, then, if clinical methods are preferable for teaching purposes, they are preferable for the practice of medicine.

The author concedes the importance of personal relationships in medical care and the need for group practice to "develop increased attention" to this aspect "if it is to stand the test of patients' satisfaction" (p. 12). He attributes this fault of group practice to the failure of teaching hospitals to emphasize the personal relationship between the physician and patient.

Dr. Baehr expresses his conviction that the development of prepayment plans for medical care will lessen the number seeking attention at free wards and outpatient clinics on which medical schools depend for their clinical teaching material. A natural consequence will be the development of clinics, in conjunction with medical schools, to take full pay as well as indigent patients. This movement is being "accelerated at the moment by the financial difficulties in which the medical schools now find themselves." Significant questions regarding the corporate practice of medicine are inherent here, but they are not discussed. He also considers the question of voluntary medical insurance plans which, in contrast to the Health Insurance Plan of New York, do not offer "complete coverage." "They leave ninety-five per cent of the medical care for families without coverage and provide only limited indemnities for illnesses in the home" (p. 19). This "defect" arises, according to the author, from the insistence of the physicians on a fee-for-service basis of payment. Furthermore, medical opinion that "fee choice" of physicians must be extended to include every physician in the state licensed to practice medicine has furnished a deterrent to the establishment of group-sponsored voluntary medical insurance plans. Dr. Baehr's point of view is in keeping with his position as an advisor and member of the board of the Health Insurance Plan of New York which offers a restricted choice of physician to the patient and a capitation basis of payment to the physician. It further illustrates his lack of understanding of the fundamentals of insurance.

A large segment of Dr. Baehr's address is devoted to describing the Health Insurance Plan and to comparing it favorably with the local Blue Shield plan. The following statement typifies the general tone of the address:

"The resistance to group practice stems chiefly from the older physicians and specialists, motivated by the conviction that they have arrived at economic and professional security and must protect their 'vested interests' from competition with another form of medical care" (p. 26).

In the third address, "Economic Aspects of Group Practice," by C. Rufus Rorem, is a discussion of the characteristics of group practice, the reasons for its failure, extent of location, equipment and organization, and a more reasonable interpretation than Baehr gives of why clinical groups have not grown more rapidly. Rorem apparently knows that 97 per cent of the physicians in active practice during the past two decades have not chosen to join groups and that many of those in individual practice have informal arrangements for referrals. His statement, "It is easier for him [the physician] to be master of his own house than to adapt his work to a group of professional equals" is in contrast to Gregg's hypothesis that physicians prefer to work in clinical groups because they are taught under that arrangement.

"A final very important reason why physicians are not forming a large number of private groups is that: they do not have to. Many of the professional and economic advantages sought in group practice have become available through the hospitals in each community" (p. 33).

Rorem then discusses with favor the development of additional medical services being offered by the hospital. He also involves himself in the question of salaried physicians.

"An adequate salary should encourage a conscientious physician to do more thorough work than otherwise. The fee-for-service basis of charge is the professional equivalent of the piece-work system in industry which serves as a speed-up device for manual workers" (p. 38).

Rorem concludes that group practice is but one phase of a complete health program for a nation.

Medical Motion Pictures

FILM REVIEWS

Pay Attention. Problems of Hard of Hearing Children. 16 mm., black and white, sound, 1,100 feet (1 reel), showing time thirty minutes. Produced in 1949 by the Department of Child Study, Vassar College, as the sixth in a series of films in Studies of Normal Personality Development, aided by a grant from the Estate of Lester N. Hofheimer. Procurable on rental or purchase from the New York University Film Library, 26 Washington Place, New York 3.

This film deals with the problems of the parents and teachers of children of all ages whose hearing is impaired. It depicts the methods by which the hard of hearing may be helped to learn lip reading, to use a hearing aid and to take their place with other children in school and at play. The opening sequences show a teacher introducing a child and his playmates to a hearing aid. The scene shows how necessary such an introduction is and by what methods it can be accomplished. A small class in lip reading is seen in session; the maneuvering whereby a resistant child is introduced to permit making of an ear mold and the tantrum of an insecure child resisting exposure to a new experience are shown with unusual naturalness. Other sequences show how painful experiences of a deafened child at home and in school will lead to reticence, day dreaming and malingering, how audiometric tests and physical examinations can aid in the recommendation of such handicaps and how older school children can profit by instruction in the psychologic aspects of lip reading, to hear others better and to make themselves better understood. This section is valuable to parents and teachers because it shows what older persons can do to make themselves more easily understood by children, whether normal or handicapped. These suggestions include proper use of lighting, special arrangements, such as the "roving seat" for the handicapped school child, and better speech habits for parents and teachers.

The film shows the advantages of supplying a hearing aid early in life, especially during the months when a baby normally learns to speak, and of having hard of hearing children grow up among normal children who have learned to accept the fact that they are handicapped.

It is difficult to imagine an audience, young or old, lay or professional, that would not profit from seeing this commendable film. It should be of special interest to parents of both deaf and normal children, teachers and school administrators.

Photographically the film is poor in places. The direct recording of group scenes is rather difficult to understand.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Validity of Examining Board's Rules Relating to Foreign Graduates.—Robert E. Nathan made application to the state board of medical examiners for permission to take the regular examination prescribed by law for license to practice medicine. The application was denied, and he appealed to the statutory appeal board, which held that he was entitled to take such examination. Accordingly, the board of medical examiners appealed to the Supreme Court of Oklahoma.

The applicant graduated from the Royal University of Florence, Italy, Faculty of Medicine, in October 1936 and immigrated to the United States, arriving May 7, 1937. On May 15 he made application for citizenship, which was granted in due course of time. During the same year, after an examination by the Board of Medical Examiners of the State of New York, he was admitted to practice medicine and surgery in that state. After serving one year as intern in St. Johns Hospital in Tulsa, Okla., he volunteered his services to the United States Government in World War II and was commissioned an officer in the Medical Corps of the United States Army, serving three years therein, a part of which was spent overseas. Thereafter he was employed by the Veteran's Administration for approximately one year in its hospital at Muskogee, Okla. While so engaged he made his application to the Oklahoma board of medical examiners. Action on the application having been delayed, he applied to the state board of medical examiners of Texas for permission to take the examination in that state. Permission was granted; he successfully passed the examination and was licensed to practice in Texas.

The medical practice act of Oklahoma provides, among other things (59 O.S. 1941, sec. 491), ". . . it is further provided that the applicant must submit satisfactory evidence that he is a graduate of a legally chartered medical college or university, the requirements of which for graduation shall have been, at the time of such graduation, in no particular less than those prescribed by the Association of American Medical Colleges for that particular year. . . ." Accompanying the applicant's application to the Oklahoma board of medical examiners, and in evidence before the appeal board, was an affidavit setting forth in detail what were averred to be the subjects required by the Association of American Medical Colleges during 1936 to be taught in a curriculum extending for a period of four years. It was further averred that the requirements for graduation of the Royal University of Florence, Faculty of Medicine, included all of said subjects and that before graduation the applicant had attended said university for a period of at least four years, actually received instruction in each and all of said subjects and completed the courses of instruction therein. The affidavit therefore declared that the requirements for the applicant's graduation were in no particular less than those prescribed by the Association of American Medical Colleges for the same year.

Under its rule-making powers, and to supplement the aforementioned provision of the Oklahoma medical practice act, the medical board in 1923 and 1937, respectively, adopted the following rules: "(1) All applicants for licensure to practice medicine and surgery in the State of Oklahoma, graduating since 1917, must have graduated from a Class "A" school, as classified by the Association of American Medical Colleges for that particular year." "(7) Due to the inability to obtain proper information as to the standing of medical schools in foreign countries, graduates of foreign schools, with the exception of approved schools of Canada, shall not be eligible for licensure in the State of Oklahoma, until further ruling of this Board." The grading required by rule 1 was done by the American Medical Association Council on Medical Education and Hospitals. Under date of Nov. 7, 1945, the secretary of the Oklahoma board received a letter from the Council on Medical Education and Hospitals which read in part:

"It has always been the policy of the Council on Medical Education and Hospitals of the American Medical Association to limit the schools which it considers for inclusion on its approved list to institutions which it can visit and inspect. Even before the war it was not possible to carry out inspections in medical schools outside the United States and Canada. Consequently, the Council maintains no list of approved schools in foreign countries. It neither approves nor disapproves such institutions.

"It is incumbent on medical schools in this country, licensing boards, or other agencies, to make their own evaluation of the credentials submitted from a medical school of a foreign country. This Council has no objection to the acceptance of credentials from such foreign institutions." The position of the medical board, said the Supreme Court, was reflected by the following excerpt from the testimony of Dr. Weber: " . . . in talking over Dr. Nathan's case at the meetings of the Board I have attended, there was no one who felt it was a reflection on Dr. Nathan's ability or his integrity but that we had a rule here we have been maintaining for a number of years. We think it is a good rule that we will not accept those that are not graduates of class 'A' schools. . . . I think the rule is safe—that we will not accept any foreign school unless it has been certified by the Association of American Medical Colleges."

The medical board contended that, unless its action in refusing applicants for examination was arbitrary and capricious, the appeal board exceeded its jurisdiction. It also contended that the unsupported affidavit of the applicant was not sufficient to satisfy the requirements of the law.

The only question of discretion on the part of the medical board, said the Supreme Court, pertains to that with which it is endowed in promulgating its rules, the effect of which, as law, must rest on the fact that they are in aid of and not in derogation of the legislative purpose. The only authorized basis for any rule is that it is a means to the accomplishment of the legislative purpose expressed in the statute, and its quality is to be judged by the effect thereof when used. If not conducive to such purpose, it is not authorized by the statute and is therefore without the force of law.

Assuming, the court continued, but not deciding, that the rule referred to is valid as fixing a standard to be applied to applicants graduating from schools within the area where the system of grading is applied, it does not follow that the rule should apply to applicants holding diplomas from schools outside of such area and to which the prescribed grading can have no pertinent bearing. Under the statute Nathan was entitled to apply for the examination. As a condition to the exercise of the statutory privilege, it was incumbent on him to furnish satisfactory evidence that the school from which he graduated measured up to the statutory requirements, and there devolved on the medical board the duty to weigh such evidence and determine whether this was sufficient. Since his graduating school was not within the area where the grading system obtained, the only intelligent method of determining the quality of the graduating school was to weigh the evidence submitted. Such conclusion as to the duty of the medical board in the situation, said the court, is expressly recognized in the letter of the Council on Medical Education and Hospitals of Nov. 7, 1945. If, on weighing the evidence submitted, the medical board found this insufficient, the application could be properly denied, in which case the terms of the statute would have been recognized as operative and the applicant, having been accorded his full right, would have no cause for complaint. But to hold that the applicant in this case is to be debarred from applying because he does not have a diploma from a grade "A" school is not only not conducive to accomplishing the purpose of the statute but is subversive thereof by withholding from the applicant a right afforded by the statute. We hold, the Supreme Court concluded, that rule 7, relied on the medical board as authority for its action, is inoperative because it is unauthorized, that the applicant was entitled to make application for the examination and that the appeal board did not exceed its jurisdiction. Accordingly the decision of the appeal board granting the applicant the right to take the examination was affirmed. *Application of State Board of Medical Examiners. In re Nathan, 206 P. (2d) 211 (Oklahoma, 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

77:285-424 (March) 1949

Thrombosis of Dural Sinuses. J. A. Toomey and H. B. Hutt.—p. 285.
*Treatment of Acute Intussusception by Enema of Roentgenologic Contrast Medium. G. Lindberg and O. Morales.—p. 303.
Electroencephalography of Newborn: II. Studies on Normal, Full Term Infants While Awake and While Drowsy. J. C. Hughes, B. Ehemann and F. S. Hill.—p. 310.
*Lacuna Skull and Craniofenestria. C. van Waalwijk van Doorn and J. N. Boet.—p. 315.
Nephrosis in Children: I. Observations on 84 Patients. II. Clearance and Saturation Tests. E. Galán.—p. 328.
Severe *Erythroblastosis Fetalis* and *Icterus Precox*: Occurrence of Both Diseases in the Same Family. G. J. Brancato.—p. 351.
Prevalence and Distribution of Ossification Centers in Newborn Infant. A. Christie.—p. 355.
BCG Vaccination Among Medical and Nursing Students. E. E. Irons. —p. 376.
Methods of BCG Production and Vaccination. S. R. Rosenthal.—p. 377.
BCG Vaccination in Chicago. R. A. Black.—p. 381.
Complications of Ascariasis Requiring Surgical Treatment: Report of Case with Abdominothoracic Complications. A. Ochsner, E. G. DeBakey and J. L. Dixon.—p. 389.

Enema of Contrast Medium for Acute Intussusception. —Lindberg and Morales present observations in 18 cases of intussusception in children under 3 years of age. The symptoms of intussusception appear suddenly. A violent pain in the abdomen causes the child to scream. The child usually draws its legs up toward the abdomen. Vomiting usually occurs. The child becomes pale, its expression suffering, its eyes vacant and fearful and its muscles relaxed. Palpation revealed an intussusception tumor in 15 of the 18 cases. The roentgen examination by means of a contrast enema is decisive for the diagnosis and is also effective in reducing the intussusception. It is important that the contrast medium be of correct temperature, consistency and pressure. The authors used a medium made with pharmabaryt® (98 per cent barium sulfate and 2 per cent indifferent colloids). To 1 Kg. (2.2 pounds) 1.25 liter (2.64 pints) of water at 37 C. (98.6 F.) is added. The enema is poured from about 1.5 meters (about 5 feet) above the level of the patient. The examiner controls the flow of the contrast medium by means of a clip on the rubber tube. The medium is allowed to flow until the obstruction is reached; a roentgenogram of the intussusception is then taken. Slowly the colon is filled and the intussusception pushed in an oral direction. The colon is usually irritated and contracts as in cramp, thereby pushing back the contrast medium and practically emptying the intestine. It is important to cut off the flow of the enema until the contraction has ceased. The reduction of the intussusception by means of an enema of roentgenologic contrast medium was successful in all the 18 cases. These favorable results are largely due to the fact that treatment was given early. The time elapsed was never more than twelve hours, and in all but 4 it was less than six hours.

Lacuna Skull and Craniofenestria.—According to van Waalwijk van Doorn and Boet lacuna skull and craniofenestria are congenital bony defects in the skull. In lacuna skull these defects are restricted to the diploe and the inner table. No abnormality may be seen in the skull during life. Palpation reveals at the site of the defects a "springy" feeling, such as that in craniobates (ping-pong-ball phenomenon). Craniofenestria is a true bony defect. The cranial contents may protrude through these defects. In addition to the defective diploe and inner table, the outer table is also absent; the dura is in contact with the periosteum. Lacuna skull and craniofenestria may be difficult to distinguish from each other, and intermediate forms occur. They are often seen with spina bifida. The prognosis depends largely on whether or not the defects are associated with a meningocele. If they are, death due to progressive hydrocephalus or meningitis is usual. In a few children with lacuna skull without other abnormalities the lacunas tend to disappear slowly, but remnants will probably always be seen on the roentgenogram. After reviewing some of the theories advanced to explain the pathogenesis of these defects, the authors present the histories of 5 patients admitted to Amsterdam pediatric clinics during 1946. The fact that craniofenestria is constantly associated with spina bifida indicates a developmental disorder. The authors suggest that in their cases the deficient diet of the mother may have been a causative factor.

American J. Obstetrics and Gynecology, St. Louis

57:625-830 (April) 1949. Partial Index

*Reactions to X-Ray and Radium Therapy in Treatment of Cancer of Uterine Cervix. D. G. Morton and J. A. Kerner.—p. 625.
Vascular Congestion and Hyperemia: Their Effect on Function and Structure in Female Reproductive Organs. H. C. Taylor Jr.—p. 637.
Vaginal Delivery Following Cesarean Section. H. E. Schmitz and G. R. Baba.—p. 669.
Effects of Various Estrogenic Preparations: II. Changes in Vaginal Mucosa and General Status of Climacteric Women Following Injection of Aqueous Suspensions of Estrone and Estradiol. M. Vogel, T. H. McGavack and J. Mellow.—p. 682.
Vaginal Removal of Uterus by Morcellation. E. Allen.—p. 692.
Relationship of Adolescent Menstruation to Body Temperature and Sterility. N. R. Cooperman.—p. 701.
Capillary Fragility and Use of Rutin in Toxemias of Pregnancy. W. J. Dieckmann, Z. Akbasli and G. T. Aragon.—p. 711.
Combined Extrauterine and Intrauterine Pregnancy. J. P. Michaels. —p. 717.
Report on 159 Third Degree Lacerations. H. A. Ingraham, M. M. Gardner and E. G. Heus.—p. 730.
*Appendicitis Occurring During Pregnancy: Diagnostic Review of 200 Cases. E. G. M. Krieg.—p. 736.
Carcinoma of Vulva: Review of 50 Cases. A. B. Lunin.—p. 742.
Evaluation of Guterman Pregnancy Test. S. D. Soule and M. Yanow. —p. 748.
Detection of Early Carcinoma of Cervix: Coning Biopsy. S. B. Gusberg.—p. 752.
Occurrence of Spina Bifida and Hydrocephalus in Siblings: Review of Literature and Case Report. J. C. F. Chapman.—p. 761.
Transverse Presentation of Fetus: Analysis of 186 Consecutive Cases C. M. Johnson.—p. 765.
Invasive Hydatidiform Mole. J. P. Hennessy.—p. 779.
Massive Aortic Dissection (Dissecting Aneurysm) Associated with Pregnancy and Hypertension. E. G. Anderson.—p. 793.
Adenocarcinoma of Ovary Diagnosed by Vaginal Smear. H. C. Frech. p. 802.
Congenital Defects in Infant Following Mumps During Pregnancy. M. W. Greenberg and J. S. Beilly.—p. 805.

Reactions to Radiation Therapy in Cancer of the Cervix.—Morton and Kerner discuss reactions incurred during radium and roentgen treatment of the pelvis in cervical cancer. Radium application is usually confined to the uterine canal and upper part of the vagina. The sphere of its activity is comparatively limited; yet in addition to the uterus and cervix proper and the upper part of the vagina the bladder and rectum may be affected as may even the small bowel if it happens to be adherent to the uterus. Roentgen therapy for cervical cancer is usually delivered through relatively large skin fields. These technics necessitate the passage of the roentgen rays through large epithelial surfaces, large volumes of muscle and supporting connective tissues and fasciae, some portions of both small and large bowel and bone. A certain amount of this is inevitable if the roentgen rays are to reach the parametria and the regional pelvic lymph nodes. With the combination of the two sources of irradiation, there are many possibilities for harm. There have been enough distressing and fatal complications to warrant analysis. The authors describe the radiation technic in use at the University of California Hospital and review the immediate and late reactions that occurred among 621 patients. The incidence of complications was definitely greater in cases in which both radium and roentgen rays were used and they also increased as the dose was increased. Overradiation was often present. They believe that a reduction in dose is in order. Factors such as screening intensity, duration of treatment and interval between treatments may play a part in this connection. Efforts should also be continued to determine the radiosensitivity of tumors, since reduced amounts might frequently be in order. Other measures which deserve further investigation are the antibiotics (disappointing so far), palliative surgery in cases of radionecrosis without recurrence, continuous hospitalization during roentgen therapy and determination of isodose curves for the method of treatment in use.

Appendicitis During Pregnancy.—Krieg reports on material obtained through the courtesy of four hospitals in Detroit. He divides the 200 patients into the following four groups: 52 with acute appendicitis, 125 with nonacute appendicitis, 2 subjected to operation during the interval and 21 discharged without operation. An analysis of the cases of acute appendicitis showed that the most important aspect of diagnosis was an accurate history. Physical examination of the patients in the "acute" series revealed a lack of findings. Only 9 presented rectus or abdominal wall spasm. The records of 18 revealed that no muscular rigidity was present. Tenderness over McBurney's point was present in only 27 cases. It was apparent that the usual physical signs were poorly demonstrable or absent in about half of the cases. Abdominal examination of the cases of nonacute appendicitis revealed no instance of finger tip localization of pain. Slight pain on deep palpation over McBurney's point or the right lower quadrant of the abdomen was mentioned in 49 cases; the absence of pain was recorded twenty-six times. This indicates that physical examination was misleading. The simple blood pictures were poor diagnostic aids. Many of the patients with acute appendicitis had cell counts within the upper limits of normal, while many with nonacute appendicitis had blood cell counts usually associated with advanced suppurative appendicitis or peritonitis. The deaths were found in the cases of well advanced appendicitis and peritonitis. The most important factor to be considered in the differential diagnosis was the pain associated with the enlarging uterus in the early stage of pregnancy and the "lightening" pains of the mother at term. If there is a definite anamnesis of appendicitis accompanied by poor physical signs, or none, and an inconclusive blood picture, immediate operation is indicated.

American Journal of Pathology, Ann Arbor, Mich.

25:187-356 (March) 1949

Pathogenesis of Experimental Hemoglobinuric Nephrosis in Rabbits, with Special Reference to Late Manifestations. J. J. Lalich.—p. 187.
Hemoglobinuria (Blackwater Fever) in Monkeys: Consideration of Disease in Man. R. H. Rigdon.—p. 195.
Enlargement of Bronchial Arteries, and Their Anastomoses with Pulmonary Arteries in Bronchiectasis. A. A. Liebow, M. R. Hales and G. E. Lindskog.—p. 211.
Histopathologic Observations in Cases of Hodgkin's Disease Treated with Nitrogen Mustard. V. H. Cornell and A. S. Blauw.—p. 233.
Cells of Megakaryocyte Series in Pernicious Anemia: in Particular, Effect of Specific Therapy. R. D. Epstein.—p. 239.
Effect of Normal Saline Solution, Ringer's Lactate Solution, and Distilled Water on Lungs of Dogs and Rabbits. H. C. Miller, T. R. Hamilton, G. W. Wise and H. A. Wenner.—p. 253.
Myocarditis in Vitamin E-Deficient Rabbits. J. H. Bragdon and H. D. Levine.—p. 265.
Factors Influencing Collagen Content in Experimental Cirrhosis. T. G. Morrione.—p. 273.
Cutaneous Leiomyoma of Goldfish: I. Morphology and Growth in Tissue Culture. H. G. Schlumberger.—p. 287.
Effects of Deprivation of Water on Adrenal Glands of Rats. J. Nichols. —p. 301.
Plasma Cell Hyperplasia and Hyperglobulinemia in Trichinosis: Duration of Larviposition. J. R. Carter.—p. 309.
Diverticula in Terminal Portion of Common Bile Duct. J. A. Sterling. —p. 325.
Neoplastic Diseases of Dogs: I. Neoplasms of Melanin-Forming Cells. R. M. Mulligan.—p. 339.

American Journal of Public Health, New York

39:577-712 (May) 1949. Partial Index

Recent Observation on British National Health Service. H. R. Leavell. —p. 577.
Can Child Accidents be Prevented in Your Community? D. B. Armstrong and W. G. Cole.—p. 585.
Chronic Disease Study of California Department of Public Health. W. L. Halverson, L. Breslow and M. H. Merrill.—p. 593.
Chronic Disease as Industrial Hygiene Problem. C. Selby.—p. 598.
Use of Statistics in Cancer Control Programs. H. F. Dorn.—p. 602.
Diabetes Control in Local Health Department. H. L. C. Wilkerson and M. J. Ford.—p. 607.
Health Officer Survey of Medical Care Program. W. H. F. Warthen —p. 614.
Training Physicians in Public Health Nutrition. F. J. Stare.—p. 624.
Public Health Engineering in Foreign Areas with American Industry. J. M. Henderson.—p. 629.

American Journal of Surgery, New York

77:409-542 (April) 1949

Sump Drainage in Suprapubic Prostatectomy. L. E. McCrea.—p. 411.
Ectopic Pregnancy: II. With Special Reference to Abdominal Pregnancy. J. Jarcho.—p. 423.
*Arterial Varices: Syndrome. G. H. Pratt.—p. 456.
Significance of Dietary Supplementation in Surgical Cases. J. L. DeCourcy.—p. 461.
Infections of Head and Neck. W. A. Coakley, D. Teplitsky and A. Diaz.—p. 469.
Sacrococcygeal Pilonidal Cyst. J. Berkowitz.—p. 477.
*DeQuervain's Disease. C. R. Hanlon.—p. 491.
Penetrating Wounds of the Abdomen. R. L. Byron Jr.—p. 499.
Use of Concentrated Plasma in Late Toxemias of Pregnancy. A. Golden.—p. 503.
Skin Traction in Guillotine Amputations. G. V. Rosenberg.—p. 505.
Umbilical Hernia: Simple Method of Repair. J. P. Campbell.—p. 506.
Modification in Technic of Establishing Temporary Transverse Colostomy. H. S. Rafal.—p. 507.

Arterial Varices: A Syndrome.—Pratt believes that some patients with arteriovenous anastomosis are treated erroneously for varicose veins. These patients have arteriovenous connections of a congenital type. The arterial and venous systems communicate during fetal life, but the junctions normally close prior to birth. In some this closure does not occur, which leads to congenital arteriovenous aneurysms or hemangiomas. In others the closure is inadequate, only a single layer of cells separating the arterial and venous systems. With increased intravascular pressure due to growth, unusual strain or trauma, immature connections "blow out" and arterial blood is pumped into the larger veins. The femoral artery or one of its branches is the usual arterial source and the saphenous system is the venous end of this connection. In others multiple anastomoses between the popliteal artery and the lesser saphenous system are found. In either case there are usually many secondary arteriovenous connections on the lateral side of the thigh or calf. The diagnosis can be made by watching for the following points: The veins dilate rapidly; they remain partially filled on elevation of the limbs; the blood in these vessels can be reduced on pressure but the veins fill more rapidly than ordinary varicose veins. Pulsation is synchronous with cardiac systole. If a needle is introduced into these veins, arterial blood will be found pulsating in the syringe barrel. Oxygen saturation tests carried out on the blood of these vessels will show a much higher percentage of saturation than that in other veins. At the author's clinic 272 patients with varicose veins of an advanced nature were analyzed. Of these 65 were found to have arteriovenous connections. In a recurrent group of 61 patients approximately half had these arterial connections. The saphenous vein and its branches should be exposed in the groin and all connections from the arterial or venous side dissected free and widely excised. A 4 inch (10 cm.) section of the saphenous vein should then be removed, the proximal end being divided at the femoral junction. Any other abnormal connections between the artery and vein should be divided. Each of the incompetent venous communicating points should be widely excised and secondary arterial connections likewise divided. The large veins on the lateral aspect of the leg or in the popliteal space must be widely excised en masse, all small connections being divided and ligated. These patients must be examined at six month intervals for a period of several years thereafter. If there is evidence of increasingly dilated veins, these areas should be treated again. The recurrence should be explained to the patient and differentiation of this group from ordinary varicose veins made clear.

DeQuervain's Disease.—According to Hanlon stenosing tendovaginitis of the radial styloid was first described by DeQuervain in 1895. The term "stenosing tendovaginitis of the extensor and abductor tendons of the thumb" is probably the most descriptive. Although DeQuervain's disease is common, it is infrequently diagnosed. In analyzing a series of wrist lesions, the author noted that 38 cases of DeQuervain's disease had been seen in the last five years. The disorder may produce considerable disability due to pain in the thumb, wrist and forearm. It is most common in middle-aged women, who use their wrist and thumb excessively. Chronic trauma is the most frequent exciting cause, although in this series 9 patients noticed symptoms after a single injury. The pain, at first dull, localizing in the region of the radial styloid and radiating into the thumb and hand and up into the forearm, is often neuralgic in character and may be worse at night. It is aggravated by motions of the thumb and wrist. In some cases the syndrome is bilateral. There is swelling over the tendon sheath and localized tenderness over the tip of the radial styloid process. A circumscribed thickening of the tendon sheath may be found on palpation, and frequently a cartilaginous thickening is felt over the styloid process situated under the skin, not adherent to underlying bone and moving with flexion and extension of the thumb. The pathognomonic sign may be noted on grasping and quickly abducting the thumb ulnarward. The pain over the styloid tip is excruciating. The possibility of DeQuervain's disease must be considered especially in a patient complaining of pain in the region of the radial styloid process; roentgen studies do not reveal abnormalities. The condition has been erroneously diagnosed as rheumatism, neuritis, periositis, tenosynovitis and tuberculous osteitis. Palliative measures often are not successful. The ideal treatment is operation, which promises immediate cure and avoids the prolonged disability of plaster of paris immobilization. An incision 2 inches (5 cm.) long, centering over the radial styloid process, is made with local anesthesia. A small branch of the radial nerve runs superficially across the field and is identified and retracted. The carpal ligament and the tendon sheath are identified and incised. The compressed tendons are thus released. The superficial fascia and skin margins are approximate, and compression bandage is applied for several days. In two or three days full motion of the thumb may be started. In the reported 38 cases treatment by immobilization proved unsatisfactory and surgical treatment was resorted to in all but 6. All of the patients operated on had immediate relief.

Annals of Internal Medicine, Lancaster, Pa.

30:713-894 (April) 1949

*Effects of "Rice Diet" upon Blood Pressure of Hypertensive Individuals. H. A. Schroeder, P. H. Futcher and M. L. Goldman. —p. 713.
Rheumatoid Spondylitis: Observations on Incidence and Response to Therapy Among Veterans of Recent War. E. C. Toone Jr.—p. 733.
Diabetic Indigestion. A. Bassler and A. G. Peters.—p. 740.
Some Unusual Observations in Post Transfusion Reactions: 2 Cases with Autopsy Findings. V. A. Digilio and A. Hochwald.—p. 745.
*Behavioral Response of Patients Seized with Acute Myocardial Infarction. S. W. McLeod.—p. 757.
Historical Review of Physical Examination of Chest. F. M. Pottenger. —p. 766.
Chronic Leukemia of Long Duration: Report of 31 Cases with Duration of Over Five Years. H. C. Moffitt Jr. and J. H. Lawrence. —p. 778.
Primary Carcinoma of Liver: 25 Year Study. G. F. Strong, H. H. Pitts and J. G. McPhee.—p. 791.
Effect on Precordial Electrocardiogram of Insulating Areas of Anterior Chest Wall. A. H. Douglas and J. S. Kalter.—p. 799.
Golden Gate of Medicine. A. Gregg.—p. 810.

Effect of "Rice Diet" on Blood Pressure.—Schroeder and co-workers treated 7 patients, 3 women and 4 men between the ages of 36 and 57, who had arterial hypertension and in whom the nonprotein nitrogen content of the blood was normal, with a diet containing unsalted rice, fruit juices and vitamins, after adequate control observations with a normal diet were made. Diastolic blood pressures were somewhat lower in 3 while they were on the rice diet, but the changes were not striking. Pressures were essentially unchanged in the other 4. One patient with impaired renal function had pronounced hypochloremia with uremia and died. The addition of sodium chloride in 2 cases and the substitution of a normal diet in 3 did not consistently reverse the effects of the rice diet. Changes in blood pressure occurring in 4 additional patients, 3 women between the ages of 23 and 40 and 1 man aged 42, after restriction of sodium chloride alone were of similar magnitude to those observed with the use of the rice diet. Similar changes have occurred in a woman aged 28 after hospitalization alone, without alterations in diet. On the basis of this study, a diet consisting of unsalted rice, fruit juices and vitamins is of questionable value in the treatment of most patients with arterial hypertension. When the disease process was advanced, neither salt restriction nor the rice diet appeared to be efficacious.

Acute Myocardial Infarction.—Of 28 patients with acute myocardial infarctions, interviewed by McLeod, 18 stated that immediately after the onset of pain they walked about with the definite feeling that walking or movement provided them relief. An additional 4 patients gave a history of walking, but they had no conception of why they did it. Another 5 patients felt that their activity was motivated by the necessity to vomit, urinate or defecate and that the walking was necessary to get to the bathroom. Only 1 patient showed no activity of significance. As far as could be determined, activity lasting from fifteen minutes to fifteen hours was an immediate response and was not engaged in after a trial period of rest had failed to relieve the pain. The patient with angina pectoris automatically stops all effort as soon as he is seized with pain. The general thesis is advanced that an additional distinction can be made between the pain of angina pectoris and that associated with a coronary occlusion on the basis of the behavioral response of the patient to his pain. In some instances this response may be of value for clinical diagnosis of coronary occlusion with myocardial infarction when it otherwise might be a matter of doubt or hesitation.

Archives of Dermatology and Syphilology, Chicago

59:251-366 (March) 1949

Virus as Possible Etiologic Agent of Erythema Multiforme Exudativum, Bullous Type: Report of Case. J. A. Anderson, V. Bolin, W. W. Sutow and W. Kito.—p. 251.
Anaplastic Epithelioma. W. Sachs, P. M. Sachs, J. B. Howell and A. Leiby.—p. 263.
Treatment of Early Syphilis with Small Doses of Crude Penicillin. A. E. Walker and M. Utterback.—p. 277.
Keratosis Blennorrhagica: Response to Streptomycin; Report of Case. R. G. Thompson, C. B. White and H. Hailey.—p. 284.
Management of Emotional Factors in Localized Neurodermatitis. W. R. Hubler.—p. 293.
Quantitative Serologic Titer in Post-Treatment Observation of Early Syphilis Treated with Penicillin. M. H. Gustafson and J. H. Bowen. —p. 303.
Lichen Planus in Subtropical Countries: Study of Annular Type with Inverse Localization (Uncovered Surfaces of Skin). A. Dostrovsky and F. Sagher.—p. 308.
Alopecia Due to Metastases from Adenocarcinoma of Breast: Report of Case. F. Ronchese.—p. 329.
Granuloma Pyogenicum Giganteum. S. Ayres Jr.—p. 333.
Contact Dermatitis Due to Phenolphthalein. L. C. Skinner Jr.—p. 338.
Use of Carboxymethylcellulose in Lotions. E. S. Bereston.—p. 339.
Alopecia Areata Associated with Refractive Errors. H. A. Haynes Jr. and T. L. Parry.—p. 340.
Familial Multiple Nevi Flammei. W. B. Shelley and C. S. Livingood. —p. 343.
Keratosis Follicularis with Changes in Skin, Mucous Membrane and Nails: Report of Case. R. H. Harris and C. J. White.—p. 346.
Reactions to Sodium Bismuth Triglycollamate ("Bistrimate"). M. H. Noun and S. Greenhill.—p. 347.

Archives of Neurology and Psychiatry, Chicago

61:227-338 (March) 1949

*Spasmodic Torticollis. II. Clinical Evaluation. E. Herz and G. H. Glaser.—p. 227.
*Id.: III. Surgical Treatment. T. J. Putnam, E. Herz and G. H. Glaser. —p. 240.
Post-Traumatic Vasothrombosis: Clinicopathologic Syndrome. I. M. Scheinker.—p. 248.
Atypical Syndromes Produced by Extramedullary Tumor of Cervical Portion of Spinal Cord. B. C. Meyer and B. D. Fine.—p. 262.
Effect of Glutamic Acid on Intelligence of Patients with Mongolism. F. T. Zimmerman, B. B. Burgemeister and T. J. Putnam.—p. 275.
*Absence of Spasm During Onset of Paralysis in Acute Anterior Poliomyelitis. L. J. Pollock, B. Boshes, I. Finkelman and others.—p. 288.
So-Called Agenesia of Corpus Callosum (Callosal Defect): Anterior Cerebral Dysraphism. O. Marburg.—p. 297.

Spasmodic Torticollis.—Herz and Glaser report on 27 men and 16 women with spasmodic torticollis admitted to the Neurological Institute of New York and followed during the period 1930-1944. The authors consider as presenting "dystonic or true torticollis" those in whom abnormal involuntary motor activity of the neck muscles is the only neurologic symptom; this activity has a predominant dystonic character. Dystonic or true torticollis should be distinguished from dystonia with torticollis, the more generalized syndrome. The course of the disease was static in 34; improvement was apparent in 6; the disease was regarded as cured in 3 patients, and remission occurred in 3. In 27 patients (over 50 per cent of the series) the basic personality pattern was abnormal. A correlation between the degree and the course of torticollis and the amount of psychogenic involvement was not present. Psychologic factors did not appear of major importance at the onset of the illness. The symbolizing explanations of torticollis on the basis of psychiatric and psychoanalytic investigations must respect the fact that the composite symbolic pattern of hysterical movements of the head is entirely different from the sustained dystonic contractions of the various muscles of the neck in torticollis.

Emotional factors can exaggerate an organic dysfunction already present in the structure of the central nervous system. The remarkable influence of affective and sensory stimuli on dystonic torticollis is still unexplained. An organic disorder of the central nervous system is responsible for the typical hyperkinesis of the neck muscles. The clinical picture may be the result of additional conditioning by psychogenic factors.

Surgical Treatment of Torticollis.—Putnam and co-workers operated on 18 patients with spasmodic torticollis. In 16 patients anterior roots of the first three cervical nerves and the spinal accessory fibers were sectioned bilaterally and in 1 patient unilaterally (Foerster-Dandy operation). In 7 of the patients the additional unilateral resection, and in 2 the bilateral resection, of the spinal accessory nerves in the neck was carried out. In 1 case the posterior divisions of the fourth and fifth nerves were resected (Keen's operation) in addition to the intradural operation and the resection of the right spinal accessory nerve in the neck. In 1 patient only the right spinal accessory nerve in the neck was resected. Except for 1 patient with a unilateral intradural operation and another one with bilateral intradural operation, definite reduction of involuntary motor activity occurred. The degree of improvement depended on various factors: 1. The propagation of the dystonic movements must be taken into account. In predominantly unilateral involvement of the neck muscles, the intradural operation alone or combined with resection of the spinal accessory nerve in the neck enables the patient to hold his head straight in the majority of cases, although occasionally some tension of the affected muscles could be felt by the patient. 2. The course of the disease plays an important part in the operative result and its persistence. The results of the operation may be completely nullified by the rapid progression of the disease. 3. In some of the patients in the series not all the steps of surgical denervation have been carried out. Resection of the posterior divisions of the lower cervical nerves might bring additional relief in cases of the progressive type. 4. The psychologic attitude of the patient must be taken into account even in the evaluation of the effects of operation. Bilateral involvement of the neck muscles with painful, severe tensions and little or no emotional background is considered a definite indication for surgical intervention.

Acute Anterior Poliomyelitis.—Pollock and co-workers carried out successive examinations, day and night, of 670 muscle groups in 30 patients with acute anterior poliomyelitis from the time of their admission to the Municipal Contagious Hospital in Chicago until discharge. The total number of examinations of muscle groups was 9,144. The patients were divided into two groups: (1) 16 patients with resulting severe muscular paralysis and (2) 14 in whom the muscles remained unparalyzed or only slightly weak. In no instance was there evidence of muscular spasm. Tenderness occurred in 236 instances (8 per cent) of the total of 2,919 muscle group examinations carried out in the first group of patients. At no time did it exceed 25 per cent. In the same group stretch pain was elicited in only 82 (3 per cent) of 2,653 muscle group examinations. It never exceeded 15 per cent at any time. In the second group of patients tenderness occurred in only 94 (1.5 per cent) of 5,952 muscle group examinations, and stretch pain was practically absent. Stretch pain and tenderness occurred more frequently in completely paralyzed muscle groups but they were noted in only a small percentage of the total muscle group examinations during the development of paralysis. Both tenderness and stretch pain occurred at a time when paralysis had fairly well progressed. With some exceptions, stretch pain usually began only when paralysis had reached its peak and when it had begun to recede.

Archives of Otolaryngology, Chicago

49:243-334 (March) 1949

Microtic Ear. E. M. Holmes.—p. 243.
Fractures of Hyoid Bone: Presentation of 2 Cases, with Review of Literature. E. G. Olmstead.—p. 266.
Salivary Adenocarcinoma of Nasopharynx: Report of Case. K. L. Diehl.—p. 275.
*Modified Radical Mastoidectomy: Preservation of Cholesteatoma Matrix; Method of Making Flap in Endaural Technic. S. H. Baron.—p. 280.
Infratemporal Fossa and Masticator Spaces. G. S. Fitz-Hugh.—p. 303.
Blast Perforation of Ear Drum. A. H. Rice.—p. 316.

Archives of Pathology, Chicago

47:99-204 (Feb.) 1949

Protein Component of Golgi Apparatus. I. Gersh.—p. 99.
Ulcers of Upper Part of Gastrointestinal Tract Associated with Acute Damage of Brain. J. P. Wyatt and P. N. Khoo.—p. 110.
*Diet and Cirrhosis of Liver. P. N. Wahi.—p. 119.
Congenital Malformation of Vertebrae (Hemivertebrae) with Aplasia of Corresponding Ribs, Associated with Lateral Meningomyelocele: Report of Case. I. R. Goldman.—p. 153.
Experimental Liposarcoma: Characteristics of Growth Under Low and Under High Caloric Intake. C. G. Tedeschi.—p. 160.
Sacculated Meckel's Diverticulum Incorporated in Wall of Ascending Colon. M. D. Bosse.—p. 175.
Hemangiosarcoma of Spleen. M. Wright.—p. 180.

Diet and Cirrhosis of Liver.—Wahi studied the livers of a large number of patients, who were admitted to the Thomason Hospital in Agra, by the needle biopsy technic. He was impressed by the frequency of hepatic lesions in patients not primarily admitted for disease of the liver. Cirrhosis of the liver is common among orthodox Hindus, who are strict vegetarians, and the poorer classes, who eat what they grow or what is cheapest. Wahi describes a research program in which the effects of various diets on laboratory animals are being investigated with a view to determining the exact role played by diet in the production of cirrhosis of the liver in Indian adults and infants. Rats weighing approximately 50 Gm. and fed a diet high in carbohydrate and low in protein show hepatic damage, which expresses itself as necrosis of the parenchyma. This may end in postnecrotic scarring if the animal lives long enough. Animals weighing over 100 Gm. are more resistant to the effect of this deficient diet and live longer. Their livers show varieties of lesions, like focal or diffuse necrosis, fatty infiltration and incipient cirrhosis. There are two stages in the development of cirrhosis of the liver; the first consists of diffuse fatty infiltration of the liver cells and the second of fibrous tissue proliferation and regeneration of liver cells. Cirrhosis of the liver is not a necessary sequel to injury of the liver cells, and fatty infiltration does not necessarily terminate in cirrhosis. It is possible that some noxious agent, like a toxin, bacterium or a virus, especially in infantile cirrhosis, acts as a precipitating factor. The quantitative determination of fibrous tissue has been found more useful in determining the presence of cirrhotic changes in early stages than the microscopic examination of stained sections.

Archives of Surgery, Chicago

58:243-410 (March) 1949

*Surgical Treatment of Ulcerative Colitis. G. W. Ault.—p. 243.
Degenerative Osteoarthritis of Hip Joint: Survey of Degenerative Arthritis Secondary to Aseptic Necrosis of Femoral Head. T. Horwitz.—p. 251.
Present Status of Injection Treatment of Hernia. A. R. Koontz.—p. 273.
Treatment of Perforation of Gastrojejunal Ulcer by Resection of Stomach and Anastomosis. A. Lurje.—p. 281.
*Use of Human Fibrin Foam and Thrombin Solution as Hemostatic Agents in General Surgery. D. State.—p. 284.
Follow-Up Results of Surgical Treatment for Nonunion of Carpal-Scaphoid Bone: Report of Nineteen Cases. C. F. Goeringer.—p. 291.
Reaction in Surgical Wounds to Surgical Gut, Silk and Cotton Sutures. M. D. Pareira.—p. 308.
Extent of Strangulation of Small Intestine Compatible with Life: Experimental Study. J. Gaster, H. A. Davis, P. A. Pritel and R. L. Marsh.—p. 312.
*Osteoid Osteoma: Report of Case with Probable Lesion. P. W. Lapidus and E. P. Salem.—p. 318.
Cystic Emphysema of Lungs. W. E. Burnett and others.—p. 328.
Progress in Orthopedic Surgery for 1946: XI. Conditions Involving Lower Part of Back. R. Beverly Raney.—p. 352.
Id.: XII. Conditions Involving Elbow, Forearm, Wrist and Hand. W. C. Graham.—p. 372.
Id.: XIII.. Amputations, Apparatus and Technic. J. W. White.—p. 399.

Surgical Treatment of Ulcerative Colitis.—Ault feels that ulcerative colitis is primarily a medical problem and that patients should not be denied the opportunity to become rehabilitated by medical management. The results of the surgical treatment of early ulcerative colitis are not impressive, although the author is aware of the experimental work now being done in regard to vagotomy. Patients who have had chronic or recurrent ulcerative colitis for several years may be considered candidates for surgery, but discretion must be exercised regarding the extent and timing of the surgical procedures. The author regards as specific indications for surgery: (1) ulcerative colitis with constitutional and visceral degenerative changes,

(2) anorectal complications, (3) polypoid degeneration and carcinoma, (4) obstruction and tumor mass, (5) perforation, abscess and fistula and (6) segmental ulcerative colitis. Acute continuous or recurrent hemorrhage is rarely an indication for surgery. Replacement with whole blood and the administration of protein solutions, vitamins and liver are helpful in these patients. In patients with acute fulminating ulcerative colitis, sepsis, toxemia, acute malnutrition and deranged physiologic process associated with severe denudation of the colon usually result in a serious constitutional decline. These patients are not acceptable candidates for surgery, because the mortality rate is too high. If they survive this phase of the disease, they may be operated on later with greater safety. Acute perforation into the free peritoneal cavity during the initial acute fulminating stage of ulcerative colitis is invariably fatal, and surgical treatment is futile. Operations were performed on 23 of 120 patients with ulcerative colitis with 5 fatalities. Ileostomy alone can be a formidable procedure. Segmental resections, partial colectomies, ileosigmoidostomies, operations for abdominal and visceral fistulas and explorations for obstruction from adhesions were performed. Surgical treatment resulted in the rehabilitation of 17 of the 23 patients, but the author doubts that the results will still be as favorable in a few years from now, since regional enteritis has developed in some patients.

Fibrin Foam and Thrombin Solution as Hemostatic Agents.—State says that at his clinic fibrin foam and thrombin solution have been used as a hemostatic agent in 42 surgical cases. Cholecystectomy was the operation in which it was used most frequently. It was used repeatedly in radical mastectomy, subtotal thyroidectomy, in operations on the liver and in a number of other operations. Fibrin foam and thrombin solution were used with uniformly good hemostasis. It has been of particular value in controlling bleeding from the gallbladder fossa, liver substance and retroperitoneal tissue spaces. Fibrin foam appears to be well tolerated by the tissues. Because the fibrin foam can be left within the tissue, it is a valuable hemostatic agent where packing is practically the only means of controlling hemorrhage, i. e., in bleeding following enucleation of a retrosternal tumor, removal of biopsy specimens of friable vascular tumors and curettage of sinuses with actinomycotic infection. In a patient with a bleeding duodenal ulcer the cessation of hemorrhage coincidental with the administration of human thrombin into the stomach through a nasal tube suggests that the hemostatic agent should be given further trial in actively bleeding duodenal or gastric ulcer.

Osteoid Osteoma.—Lapidus and Salem believe that although a number of cases of osteoid osteoma have been recorded since Jaffe's first description in 1935, the condition frequently remains unrecognized. The authors report the case of a youth, aged 16, which is noteworthy because it is the first on record in which there was an apparently double lesion—one, definitely proved, over the lesser trochanter of the femur and another over the lateral aspect of the shaft of the same femur, inadvertently not confirmed microscopically, Symptoms persisted after removal of the lesion over the femoral shaft, and only after removal of the osteoid osteoma near the lesser trochanter was complete relief obtained.

Arizona Medicine, Phoenix

6:1-80 (March) 1949

Treatment of Craniocerebral Injuries. J. Martin.—p. 21.
Differential Diagnosis of Radiating Pain from Neck and Shoulder Girdle into Upper Extremities. W. A. Bishop Jr.—p. 25.
Riedel's Struma. E. P. Palmer.—p. 31.
Importance of Rh Factor in Surgery and Obstetrics. A. C. Emmel. —p. 32.

6:1-84 (April) 1949

Rest and Exercise in Management of Rheumatic Fever. I. Stevenson. —p. 13.
*Postspinal Puncture Headache. Z. B. Noon.—p. 19.
Surgical Treatment of Pulmonary Coccidioidomycosis (Local Excision of Small Lesions). D. W. Melick.—p. 24.

Headache After Spinal Puncture.—According to Noon headache is the most frequent undesirable secondary effect of spinal puncture. Its incidence has been variously reported as less than 1 per cent and more than 56 per cent. The material analyzed by the author consisted of 1,658 spinal punctures, 1,158 for diagnostic purposes and 500 to induce spinal anesthesia. The etiologic aspects of post spinal puncture headache are not entirely clear; the "leakage" theory is at present the most widely accepted. Some observers have questioned this theory and have placed more emphasis on emotional and psychologic factors. The use of amobarbital sodium for the prevention of headache by some observers lends credence to the major role that emotional factors play in the causation of headache. The author found that sedation with 3 grains of seconal sodium® (sodium 5-allyl-5-[1-methylbutyl] barbiturate) prior to puncture did not result in a lowering of the incidence of postpuncture headache. He likewise found no appreciable difference in the incidence of headache in those who were active soon after puncture and those who were kept recumbent for twenty-four hours. There was an over-all incidence of postpuncture headache of 29 per cent in 1,658 spinal punctures. In only 7 per cent of 500 cases of spinal puncture done for inducing spinal anesthesia did headache develop. The treatment of the headache is symptomatic.

Canadian Medical Association Journal, Montreal

60:*329*-438 (April) 1949

Medical Resurvey of Nutrition in Newfoundland, 1948. W. R. Aykroyd and others.—p. 329.
*Staphylococcal Pneumonia in Childhood. N. G. B. McLetchie.—p. 352.
*Non-Paralytic Poliomyelitis: Observations on Differential Diagnosis. N. Silverthorne and others.—p. 356.
*Laboratory Studies on Poliomyelitis, Toronto, 1947. A. J. Rhodes, L. McClelland and W. L. Donohue.—p. 359.
Problems of Cataract Extraction in Palestine. J. C. Gillan.—p. 363.
Psychiatry and the General Practitioner. M. B. Etziony.—p. 366.
Review of Pathology and Etiologic Factors in Rheumatic Diseases. L. Lapin and H. Starkey.—p. 371.
Distribution of Streptomycin Sensitive Tubercle Bacilli in Lungs of "Resistant" Patient. A. R. Armstrong and A. M. Walker.—p. 383.
Survey of Food Intakes of Patients Receiving Routine Ward Diets in General Hospital. E. H. Bensley, G. E. Joron and E. K. McDonald. —p. 384.
Problems Involved in Use of Dicoumarol in Acute Coronary Thrombosis J. H. B. Hilton, W. M. Cameron, S. R. Townsend and E. S. Mills. —p. 386.
Self-Demand Feeding of Infants. C. K. Rowan-Legg.—p. 388.
Porphyria. C. Slade.—p. 392.
Regression of Diverticula Following Relief of Vesical Neck Obstruction. C. Schneiderman.—p. 396.
Neurofibroma of Small Intestine Causing Complete Obstruction. J. R. Smith and E. A. MacNaughton.—p. 399.

Staphylococcic Pneumonia in Childhood.—McLetchie calls attention to the highly invasive and toxic potentialities of staphylococci and to the increasing incidence of staphylococcic pneumonia in infancy and childhood. He illustrates this by the description of the sudden and unexpected deaths of 2 infants in the nursery of a small rural hospital and by a summary of deaths from staphylococcic pneumonia in childhood occurring at Regina General Hospital. That the Staphylococcus is a major pathogen in primary pneumonia in infancy and childhood is borne out by an analysis of the cases of pneumonia in children up to 12 years of age who were examined post mortem in the period 1939 to 1948. Cases of aspiration of food or vomitus were excluded. The cases reviewed by the author show that in Regina the Staphylococcus is the only organism commonly producing fatal pneumonia in infancy and childhood. Recently the organisms encountered in southern Saskatchewan have been resistant to penicillin and sensitive to streptomycin.

Nonparalytic Poliomyelitis.—Silverthorne and associates point out that a diagnosis of nonparalytic poliomyelitis is seldom made with confidence except during the summer and fall when cases of paralytic disease are also seen. Facilities for the laboratory diagnosis of poliomyelitis have recently become available. The authors have attempted to correlate clinical observations with laboratory findings. This study was made necessary by reports that in the fall of 1947 mild "poliomyelitis-like illnesses" were prevalent in the United States and Canada. The plan was to carry out tests for poliomyelitis virus, other viruses and bacterial infections in cases of suspected nonparalytic poliomyelitis. The clinical, biochemical, bacteriologic and hematologic studies are reported in this paper and the virus studies in the following communication. This report relates to 37 patients with the nonparalytic form of the disease admitted at the "peak" of the epidemic in September and October; patients with paralytic disease were being admitted at the same time. Approximately half of the group of 37 patients with suspected nonparalytic poliomyelitis had a mild illness that in nonepidemic times would seldom be diagnosed as poliomyelitis. The illness in the other half was more severe. Only 4 out of 21 patients showed a raised total protein level in the cerebrospinal fluid persisting for several weeks after onset, and this contrasted with the observations in patients with paralytic disease, in which 15 out of 20 had such a rise. Poliomyelitis virus was isolated from the stool in only 4 of 20 nonparalytic patients studied, representing both the mild and the severe illness. In 1 case the infection was proved to be due to mumps. Without serologic tests, differentiation between meningitis due to the viruses of poliomyelitis and mumps may be difficult, especially where the meningeal reaction precedes parotitis. The authors believe that in the past in many cases mumps meningitis or encephalitis has been wrongly diagnosed as poliomyelitis. It is suggested that a provisional diagnosis of nonparalytic poliomyelitis is justified and that there may be some other reason to account for failure to isolate virus. The possibility should be considered that some of the patients were infected with another virus.

Laboratory Studies on Poliomyelitis.—Rhodes and co-workers report a combined clinical and laboratory study in 37 patients with lymphocytic meningitis, regarded clinically as nonparalytic poliomyelitis, admitted to the Hospital for Sick Children, Toronto, Canada, during the 1947 "poliomyelitis season." An effort was made to establish the precise cause in as many of these cases as possible and, to this end, a series of tests for viral agent was carried out. Poliomyelitis virus was sought by inoculation of raw stool extracts nasally in Rhesus monkeys and etherized extract administered intraperitoneally or intradermally. Five patients with paralytic disease were examined, and poliomyelitis virus was recovered from the stools of 3. Tests were carried out in 20 patients with nonparalytic disease, but poliomyelitis virus was isolated from the stools of only 4 patients. Serologic tests for mumps showed that one of the cases regarded clinically as a case of nonparalytic poliomyelitis was mumps meningitis. Results of tests of acute and convalescent phase serums of the patients with nonparalytic disease for evidence of infection by St. Louis encephalitis, lymphocytic choriomeningitis and Western and Eastern equine encephalomyelitis viruses were all negative. No viruses were isolated by inoculation of cerebrospinal fluid in laboratory animals and fertile eggs. Virus studies thus failed to confirm the clinical diagnosis of nonparalytic poliomyelitis in 15 of 19 cases. It is tentatively suggested that a "polio-myelitis-like" illness, not due to the classic type of virus, was prevalent in Ontario in 1947 at the same time as typical poliomyelitis.

Minnesota Medicine, St. Paul

32:337-448 (April) 1949

Postoperative Complications of Thyroidectomy. D. C. MacKinnon.—p. 361.
Control of Tuberculosis in Minnesota. P. R. Beckjord.—p. 373.
Survey of Valvular Heart Disease in 1,000 Cases of Pulmonary Tuberculosis. H. L. Neuenschwander, J. R. Miller and J. F. Briggs.—p. 378.
Positions of Patient—Their Effect on Spinal Anesthesia. F. Cole.—p. 380.
Advantages of Separate Nursery for Premature Infants. S. L. Arey and M. P. Christiansen.—p. 384.
Tractor Drivers' Complaints. E. C. Paulson.—p. 386.
St. Cloud Cancer Detection Clinic. A. H. Wells.—p. 388

New England Journal of Medicine, Boston

240:529-588 (April 7) 1949

Gastric Suction: Proposed Additional Technic for Prevention of Asphyxia in Infants Delivered by Cesarean Section: Preliminary Report. S. S. Gellis, P. White and W. Pfeffer.—p. 533.
Gynecomastia in Association with Chronic Ulcerative Colitis. L. H. Kyle.—p. 537.
Eosinophilic Granuloma of Rib: Report of Case Observed for Eight Years. A. R. Grant, R. K. House and W. B. Crandell.—p. 541.
Surgery of Autonomic Nervous System. R. H. Smithwick.—p. 543.
Primary Systemic Amyloidosis, Involving Myocardium, Cardiac Valves, Lungs, Spleen, Lymph Nodes and Blood Vessels: Severe Purpuric Hemorrhages of Skin, Intestines and Peritoneum.—p. 572.
Plasmocytic, Multiple Myeloma; Myeloma Kidney.—p. 578.

New Orleans Medical and Surgical Journal

101:461-516 (April) 1949

Introduction to American Academy of General Practice. S. R. Truman.—p. 461.
Trends of Medical Practice. P. A. Davis.—p. 462.
Home Obstetrics. D. G. Miller.—p. 467.
Coronary Artery Heart Disease. D. D. Warren.—p. 471.
Ethics in Medical Practice. K. Rand.—p. 475.
Essential Considerations of Chronic Diarrheas. J. S. D'Antoni.—p. 478.
Pyloric Stenosis and Pylorospasm. C. E. Hamilton.—p. 482.
General Practitioner and National Medicine. A. C. Sudan.—p. 484.
Urinary Tract Infections During Pregnancy. H. T. Beacham, W. D. Beacham and D. W. Beacham.—p. 490.
Basic Treatment of Rheumatoid Arthritis. T. E. Weiss.—p. 496.
Gynecic Symptom Complexes. W. F. Guerriero.—p. 502.

101:517-564 (May) 1949

Decortication of the Lung. W. W. McCook.—p. 517.
Disseminated Coccidioidomycosis: Report of Case in Louisiana. A. N. Evans, O. J. Andy and O. J. Labarge.—p. 525.
Reflex Sympathetic Dystrophy. S. Halle.—p. 529.
*Hypertension Treated by Irradiation of Adrenals; with Report of 23 Cases. A. S. Alexander and R. W. Young.—p. 536.
Spontaneous Perirenal Hematoma: Two Case Reports. H. Q. Gahagan.—p. 541.
Thoraco-Abdominal Injuries. D. B. Williams.—p. 544.
Subtaloid Dislocation of Foot; Case Report of the Outward Type. C. V. Hatchette.—p. 549.

Hypertension Treated by Irradiation.—Alexander and Young followed the work of Raab, Soule and Bougoslavskaia in treating 23 patients with hypertension by roentgen irradiation over the adrenal glands and lower dorsal sympathetic chains. The patients were given six successive treatments alternating on the right and left sides, so that at each treatment a skin dose of 250 r was delivered. Nausea, the main side effect, was controlled by oral administration of vitamin B complex. Vascular hyperreactive patients, patients with latent hypertention and patients with vascular reactions occurring from secondary factors, such as nephritis, atrophic kidney, Buerger's disease, hyperactive adrenals, hyperactive carotid sinus, allergy and coarctation of the aorta, responded most favorably to treatment. The most satisfactory response was in the group of vascular hyperreactive patients, the group with secondary hypertension ranking second in response and the group with latent hypertension third. Little or no response was obtained in patients with diffuse vascular disease. The most striking relief was in patients with anginal pain; they were relieved of pain for long periods or permanently, which allowed them to resume a normal life. The value of this method of treatment in preventing vascular hyperreactive patients, who are usually young persons, from becoming latently hypertensive is still under study. Follow-up of 1 patient with Buerger's disease revealed that the patient was able to take extended hikes of 2 to 5 miles without any evidence of claudication. Irradiation treatment of this type is contraindicated in patients with symptoms of primary adrenal insufficiency, with coronary thrombosis within the past three months, with tuberculosis of the kidney or peritoneum and with cardiac decompensation.

Pediatrics, Springfield, Ill.

3:401-574 (April) 1949. Partial Index

Child Health Services and Pediatric Education. W. R. Sisson and J. P. Hubbard.—p. 401.
*Therapy and Prognosis of Fibrocystic Disease of Pancreas. D. H. Andersen.—p. 406.
Renal Clearances of Sodium Penicillin G, Procaine Penicillin G and Inulin in Infants and Children. H. L. Barnett, H. McNamara, S. Shultz and R. Tompsett.—p. 418.
Simplified Infusion Set for Infants. M. Sutton.—p. 423.
BCG Tuberculin Studies: Experimental and Clinical Investigation. J. H. Magnusson and A. Lithander.—p. 429.
Acute Serous Meningitis and Encephalitis Complicating Scarlet Fever. L. K. Sweet.—p. 442.
Effect of Smallpox Vaccination During Pregnancy on Incidence of Congenital Malformations. M. Greenberg, A. Yankauer Jr., S. Krugman and others.—p. 456.
Central Autonomic Dysfunction with Defective Lacrimation. C. M. Riley, R. L. Day, D. McL. Greeley and W. S. Langford.—p. 468.
Studies in Relation of Hemolytic Streptococcus to Rheumatic Fever: VI. Comparison of Streptococcal Antihyaluronidase with Antibodies to Other Streptococcal Antigens in Serum of Patients with Rheumatic Fever and Acute Streptococcal Infection: Mucin Clot Prevention Test. T. N. Harris, S. Harris and R. L. Nagle.—p. 482.

Fibrocystic Disease of the Pancreas.—Andersen discusses the etiologic aspects of the respiratory lesion in fibrocystic disease of the pancreas and summarizes the congenital and nutritional hypotheses. She shows that there is no morphologic evidence that a specific congenital abnormality exists in the bronchi or in their secretion. The microscopic appearance of the mucus does not resemble that of the contents of the pancreatic ducts but does resemble the mucus seen in some other clinical conditions, notably asthma. A physiologic congenital abnormality of the bronchi is possible but unproved. Evidence is presented that dietary therapy improves the growth curves of infants in whom fibrocystic disease was diagnosed and treated before a respiratory infection developed. The absorption of vitamin A, and presumably of other fat-soluble specific substances, is affected by diet. The author presents 22 cases of fibrocystic disease without clinical evidence of respiratory infection. Twenty-one of the patients were first seen after penicillin became available, but only 11 have received it. The majority of the 22 patients were given dietary therapy before a cough had been present for as long as two months. This record is presented as evidence in favor of a nutritional factor in the causation of the respiratory infection.

Physiological Reviews, Baltimore

29:1-90 (Jan.) 1949

Biological Rhythms and Cycles. N. Kleitman.—p. 1.
Initiation and Early Changes in Character of Heart Beat in Vertebrate Embryos. B. M. Patten.—p. 31.
Factors Controlling Development and Progression of Diabetes. A. Lazarow.—p. 48.
Diabetes and Insulin-Administration Problem. J. J. Lewis.—p. 75.

Public Health Reports, Washington, D. C.

64:403-438 (April 1) 1949

Tuberculosis Mortality in the United States, 1947. S. A. Lewis.—p. 405.
Collodion Agglutination Test for Histoplasmosis. S. Saslaw and C. C. Campbell.—p. 424.
Characteristics of Commercial X-Ray Intensifying Screens and Films—IV. W. W. Van Allen.—p. 430.

64:439-470 (April 8) 1949

Statistical Studies of Heart Disease: IV. Mortality from Heart Disease (All Forms) Related to Geographic Section and Size of City. M. Gover. —p. 439.
Raffinose Serum Tellurite Agar Slants as Replacement for Loeffler's Medium in Diphtheria Diagnosis. O. R. Whitley and S. R. Damon. —p. 457.

64:471-498 (April 15) 1949

Work of State and Local Industrial Hygiene Agencies. V. M. Trasko. —p. 471.
Cobalt and Dust Environment of Cemented Tungsten Carbide Industry. L. T. Fairhall, R. G. Keenan and H. P. Brinton.—p. 485.

64:499-522 (April 22) 1949

Q Fever Studies in Southern California: III. Effects of Pasteurization on Survival of C. Burneti in Naturally Infected Milk. R. J. Huebner, W. L. Jellison, M. D. Beck and F. P. Wilcox.—p. 499.

64:523-550 (April 29) 1949

Time Analysis of Public Health Nursing Service: Alameda County Health Department, 1946-1947. J. C. Malcolm, J. W. Moreland, R. Hopkins and M. A. Snyder.—p. 523.
**Isolation of Brucella Abortus from Hogs.* N. B. McCullough, C. W. Eisele and E. Pavelchek.—p. 537.

64:551-588 (May 6) 1949

Use of Yeast-Phase Antigens in Complement Fixation Test for Histoplasmosis: III. Preliminary Results with Human Sera. C. C. Campbell and S. Saslaw.—p. 551.
Persistence of Fluoroscopic Screens. W. W. Van Allen.—p. 560.
Demonstration of Tubercle Bacilli in Sputum Smears: Selection of Choice Particles Compared with Various Sodium Hydroxide Concentration Techniques. G. A. Spendlove, M. Cummings and R. A. Patnode.—p. 574.
Characteristics of Commercial X-Ray Screens and Films. V. W. W. Van Allen.—p. 581.

Isolation of Brucella Abortus from Hogs.—McCullough and associates point out that Brucella suis is regarded as the causative agent of brucellosis in swine, although Brucella melitensis has been isolated from hogs by some investigators. It is a general belief that Brucella abortus is not pathogenic for swine. The authors obtained submaxillary lymph nodes in a program of routine weekly sampling from hogs slaughtered in a packing plant in Chicago. This program has now extended over six months. The nodes were removed with sterile instruments, placed in individual sterile screw-capped glass jars and returned to the laboratory. Here each node was removed from its container, trimmed of fat, well seared in a flame and sectioned and the cut surface directly streaked on the surface of trypticase-soy ager medium. Sterile instruments were used throughout and resterilized between use on individual specimens. The inoculated plates were incubated at 37 C. in an atmosphere of 10 per cent added carbon dioxide. With this method Br. abortus was recovered from the lymph nodes of 8 hogs. All eight strains of Br. abortus adhered to the differential characteristics of the species. The occurrence of Br. abortus in swine has bearing on the brucellosis control program in domestic animals. It may also clarify some points in the epidemiology of the disease in man.

Radiology, Syracuse, N. Y.

52:465-620 (April) 1949

Arthrograms. H. Kehkian and E. K. Lewis.—p. 465.
Electrokymography of Heart and Great Vessels: Correlation with Roentgenkymography in Clinical Case Studies. H. M. Stauffer and J. Jorgens.—p. 488.
Evaluation of Needle Aspiration Technic in Breast Lesions. J. W. Budd.—p. 502.
*Value and Limitations of Aspiration Biopsy for Lung Lesions. G. P Rosemond, W. E. Burnett and J. H. Hall.—p. 506.
*Diagnosis of Bronchogenic Carcinoma by Cytologic Methods. S. M. Farber, M. A. Benioff and A. K. McGrath Jr.—p. 511.
Minimal Tuberculosis: Problems in Roentgenologic Interpretation. I. D Bobrowitz and A. Hurst.—p. 519.
Radium Therapy in Carcinoma of Female Urethra. R. E. Fricke and J. T. McMillan.—p. 533.
Carcinoma of Thyroid Gland. W. E. Howes and M. N. Foote.—p. 541.
Graves' Disease: Twenty-Five-Year Follow-Up of Cases Receiving Roentgen Therapy. J. M. Read.—p. 557.
Roentgen Therapy of Carcinoma of Skin of Eyelids. J. A. del Regato. —p. 564.
Effects of Radiation Therapy on Urinary Excretion of Niacin and Riboflavin in Patients with Malignant Diseases: Relationship to Radiation Sickness. J. L. Jarvis and D. Cayer.—p. 574.
Anti-Histamine Ointments for Skin Protection in Radiation Therapy. M. P. Mains.—p. 579.

Aspiration Biopsy of Lung Lesions.—*Rosemond* and associates practiced needle biopsy in diagnosing 272 malignant pulmonary lesions in 231 patients since 1936. They have been impressed with the efficacy of the method. They utilized this method without first using a narcotic, and the patient often walked back to his room. The procedure is simple and should be used when a definite diagnosis of carcinoma cannot be made by bronchoscopy or by sputum analysis. The hazards involved can be minimized if precautions are observed. The authors have not had a serious pneumothorax in any patient who did not show roentgen evidence of pulmonary emphysema. They did not see empyema as the result of their traversing an infected lung, although they did not utilize this procedure when a pneumothorax was present or when the layers of visceral and parietal pleura were not in apposition. They saw no evidence that tumor is spread along the needle track on withdrawal of the needle. The method is especially efficacious in peripheral lesions. Although a tissue diagnosis cannot be obtained when calcification is present in a peripheral nodule, the nodule can be moved visibly and calcification palpated with the needle so that at least a tentative diagnosis can be made in such cases. The method lends itself especially well to soft carcinomas peripherally located in the lung. The authors had little success in diagnosing firm, solid, benign lesions or lymphoblastomas. Success was limited also when they attempted to diagnose lesions which cannot be definitely visualized and when they aimed solely at the base of an atelectatic area. The method is relatively useless unless a biplane or multiplane fluoroscope, a competent fluoroscopist and a pathologist are available.

Cytologic Methods for Diagnosis of Bronchogenic Carcinoma.—Farber and co-workers have been evaluating the Papanicolaou method in sputum and bronchial secretion for the past two years. They have made cytologic studies on 2,228 specimens, representing 671 cases, of which 100 have been proved to be cancer of the lung. Sputum from 89 of the 100 proved cases was examined and cells "consistent with malignancy" or "suspicious" were found in 63, or 71 per cent. Bronchoscopically obtained secretions in 45 proved cases were examined, and positive findings were reported in 26 (58 per cent). When a complete series of five sputum specimens was studied, the accuracy of cytologic diagnosis was increased to 90 per cent (63 of 69 proved cases). In 20 of the 26 proved cases missed by sputum examination, the number of specimens examined was inadequate. The caution exercised in the application of diagnostic criteria was justified, since in no case in which cells were reported as "consistent with malignancy" and in which pathologic examination was obtained did the sections fail to reveal cancer. When sputum and bronchoscopically obtained smears from the same patient have been examined, the accuracy has been comparable. The authors stress that in cases in which equivocal silent lesions of the lungs and bronchi were discovered by roentgen examination of apparently healthy persons, as well as in cases of clinically manifest chest disease, it has been possible in many instances to determine the malignant nature of the lesions when exfoliated neoplastic cells were found in sputum or bronchial aspirations.

Rocky Mountain Medical Journal, Denver

46:265-344 (April) 1949

Chemotherapy of Cancer. B. J. Duffy Jr.—p. 284.
Familial Leg Ache in Children. E. M. Jeppson.—p. 288.
Acute Intussusception Due to Torsion of Meckel's Diverticulum: Operation and Recovery. G. J. Harmston and W. E. Cragun.—p. 291.
Management of Acute Cholecystitis. E. W. Barber.—p. 293.
Distribution of Physicians and Physicians' Services in Colorado in 1948. III. Other Licensed Practitioners of Healing Arts and Effects of Colorado Basic Science Law. H. J. Dodge, M. M. Clapper and W. Darley.—p. 296.
Jejuno-Ileal Diverticula: Review of Literature and Case Reports. R. E. Watts and S. M. Ramer.—p. 301.
Further Experience with Methergine as Oxytocic. M. J. Baskin.—p. 304.

Surgery, St. Louis

25:489-654 (April) 1949

*Experimental Study of Collateral Coronary Circulation Produced by Cardiopneumonopexy. B. N. Carter, E. A. Gall and C. L. Wadsworth. —p. 489.
Determination of Blood Iodine: Useful Method for Clinical Laboratory. A. C. Connor and others.—p. 510.
*Bronchiectasis: Its Curative Treatment by Pulmonary Resection: Analysis of 96 Cases. A. Ochsner, M. DeBakey and P. T. DeCamp. —p. 518.
Anatomic Guide to Intersegmental Plane. B. H. Ramsay.—p. 533.
Use of Glycine in Treatment of Peripheral Vascular Disease. J. R. Gustafson, K. N. Campbell, B. M. Harris and S. D. Maltón.—p. 539.
Amputation for Gangrene Due to Occlusive Arterial Disease. S. Perlow and H. A. Roth.—p. 547.
Experimental Anastomoses of Vessels to Heart: Possible Application to Superior Vena Caval Obstruction. F. Gerbode, J. Yee and F. F. Rundle.—p. 556.
Coexistence of Intra-Abdominal Lesions in Patients with Epigastric Hernia. J. M. Hoffman and G. D. Wood.—p. 566.
New, Safe, Simple Apparatus for Obtaining Negative Suction for Patient with Indwelling Gastrointestinal Tube. K. A. Merendino and J. A. Phelan.—p. 576.
Modified Synthetic Predigested Aliment for Protracted Jejunostomy Feeding. F. Hollander and H. A. Sober.—p. 580.
Excision of Small Tumors of Skin of Face with Special Reference to Wrinkle Lines. C. J. Kraissl and H. Conway.—p. 592.
Sigmoidoscope with Proximal and Distal Illumination. R. Turell.—p. 601.
Antihistamine Therapy in Thrombophlebitis Migrans: Case Report. F. A. Selecman and E. W. Miller.—p. 605.
Multiple Aorto-Intestinal Fistulas Secondary to Swallowed Foreign Body. J. D. Hoyle.—p. 608

Collateral Coronary Circulation Produced by Cardiopneumonopexy.—Possible sources of collateral blood supply to myocardium are the thoracic wall, including the pectoral muscles, the internal mammary artery, the intercostal arteries, the pericardium, the omentum and the lung. The lung appeared to provide the most effective source for a collateral blood supply to the heart. The authors selected asbestos as the irritant for the production of adhesions in the operation which they termed cardiopneumonopexy. This report describes the effects obtained with cardiopneumonopexy in mongrel dogs. They obtained gross and microscopic evidence that by this operation new vascular channels can be produced between the myocardium and the adherent lung, but the amount of blood flow, the direction of the flow or the duration of the patency of these channels was not established. In the instances in which cardiopneumonopexy was performed on normal hearts, injections of 10 per cent suspension of india ink in blood at normal pressures revealed some filling of the superficial vessels in the myocardium, but in cases in which the heart had been rendered ischemic by coronary artery ligation there was considerably greater filling not only of the superficial vessels but of the deep ones as well. Comparison of specimens obtained from dogs in which ligation of the anterior descending branch of the left coronary artery had been performed after cardiopneumonopexy with those from dogs in which ligation alone was done revealed less extensive infarcts and a lower mortality rate in the protected series. Whereas the mortality rate in the protected series was 20 per cent, in animals with simple ligation it was 48 per cent. Severe infarction occurred in 75 per cent of animals with simple ligation but in only 23 per cent of animals with ligation subsequent to cardiopneumonopexy.

Bronchiectasis; Treatment by Pulmonary Resection.—Of the 96 cases of bronchiectasis reviewed by Ochsner and associates, 74, or more than three fourths, concerned patients less than 40 years of age. Bronchiectasis usually appears after an acute infection of the lower part of the respiratory tract. Weak expulsive efforts may result in atelectasis, and as the atelectasis persists the retained infected secretions cause inflammation and destruction of the bronchial walls with subsequent dilatation. The average duration of symptoms in the patients was thirteen years. The chief complaint is usually chronic cough with expectoration. The quantity of sputum may be as much as 12 ounces (340 Gm.) or more daily. Hemoptysis is frequent and sometimes massive. Foul sputum and clubbed fingers occur only in the cases of advanced disease. The apparent paradox of severe symptoms and minimal physical observations and roentgenographic abnormalities should suggest the diagnosis of bronchiectasis. The essential diagnostic method is bronchographic examination, which is fluoroscopic and roentgenographic examination following the instillation of a radiopaque substance into the bronchial tree. Although significant palliation may be obtained by conservative measures, pulmonary resection is the only satisfactory form of surgical therapy. The more localized the disease, the more amenable it is to resection, but careful segmental and lobar resections can eradicate even bilateral disease involving several lobes. In bilateral bronchiectasis, if the major involvement is on one side the degree of relief obtained following resection of this portion of the pulmonary bed may be sufficient to obviate the necessity of resection on the second side. Accurate diagnosis is essential; preparation must be thorough. Expert anesthesia and adequate supply of blood are required. Postoperative management demands a degree of vigilance scarcely equaled in any other thoracic or general surgical condition. There was no hospital fatality in the last 92 operations. Subsequent death from pulmonary disease occurred in 3.1 per cent of the cases. The incidence of irremedial unsatisfactory results was 4.2 per cent. With present experience and facilities most of these unsatisfactory results are preventable. Pulmonary resection is indicated in any established case of bronchiectasis, provided the disease is neither too mild nor too extensive, the patient is not elderly and there are no medical contraindications.

Tennessee State Medical Assn. Journal, Nashville

42:75-114 (March) 1949

Destruction of Retinal Angiomas by Diathermy. P. M. Lewis.—p. 75.
Virus Hypothesis. F. R. Haselton.—p. 79.
Tennessee's Program of Practical Nurse Training. W. A. Seeley.—p. 80.
Use of Methadone to Combat Withdrawal Symptoms of "Dilaudid" Addiction: Case Report. B. R. Powers.—p. 83.

42:115-146 (April) 1949

Socialized Medicine. E. T. Brading.—p. 121.
Treatment of Alcoholism by Conditioned Reflex Method. J. A. Wallace. —p. 125.
Wherefores and Whyfores of General Practice. D. J. Johns.—p. 129.

Virginia Medical Monthly, Richmond

76:159-212 (April) 1949

Outline of Proposed Experiments and Observations for Further Investigation of Poliomyelitis. J. H. Smith.—p. 161.
Spontaneous Hemopneumothorax—Report of 2 Cases. C. L. Harrell. —p. 167.
Treatment of Carcinoma of Esophagus. F. P. Coleman.—p. 170.
Results of 1,000 Examinations in Bessie Dunn Miller Cancer Detection Center. W. E. Bray Jr.—p. 174.
Echinococcic Cyst of Liver. H. L. Skinner and R. R. Smith.—p. 178.
Subcutaneous Plasma Infusion in Convalescent Children. I. C. Grant, M. G. Irons, J. S. Morris and J. C. Forbes.—p. 182.
Ovarian Agenesis (Turner's Syndrome) Report of Case with Post Mortem Findings. J. M. Moss and K. F. Menk.—p. 186.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

18:1-72 (July) 1948. **Partial Index**

Progress of Surgery, with Especial Reference to Intracranial Surgery. H. Cairns.—p. 3.
Treatment of Bilateral Renal Calculi. M. S. S. Earlam.—p. 16.
Cysts of Mesonephric Tract. E. R. Reay.—p. 26.
Rupture of Biceps Brachii, with Report of Case of Bilateral Rupture of Long Tendon. H. K. Cristie.—p. 37.
*Massive Hemorrhage per Rectum Due to Disease in Meckel's Diverticulum: Report of Case. O. J. Ellis.—p. 51.

Rectal Hemorrhage Due to Disease in Meckel's Diverticulum.—Ellis reports the case of a young woman, aged 18, who bled profusely from her rectum. On the two following days her bowels moved twice daily, there being a small amount of bright blood with each motion. Later she had another profuse hemorrhage and was hospitalized. Her erythrocyte count was only 3,000,000. She was given a blood transfusion. Proctoscopic and sigmoidoscopic examination revealed a normal rectum and no hemorrhoids. The sigmoid was normal, but there was a small amount of bright blood seen at the apex of the sigmoidoscope. A provisional diagnosis of ulceration in a Meckel's diverticulum was made. Operation revealed a Meckel's diverticulum situated about 2½ feet (76 cm.) from the ileocecal junction. The apex of the diverticulum was attached to the right of the umbilicus. There were two vessels on the peritoneal surface of the proximal half of the diverticulum, which was removed. The patient made an uneventful recovery. Macroscopic examination of the surgical specimen disclosed a healed ulcer, and microscopic study of sections revealed typical gastric mucosa. Review of the literature convinced the author that the presence of aberrant gastric mucosa is an almost constant feature in the cases in which ulceration takes place in the diverticulum.

British Medical Journal, London

1:691-736 (April 23) 1949

Women War Captives in Russia. R. F. A. Dean.—p. 691.
P. T. A. P.: The Present Position. L. B. Holt and G. Bousfield.—p. 695.
Method of Increasing Lung Blood Supply in Cyanotic Congenital Heart Disease. N. R. Barrett and R. Daley.—p. 699.
*Association of Maternal Obesity, Large Babies and Diabetes. J. A. L. Gilbert.—p. 702.
*Glossitis in Addisonian Pernicious Anemia: Effect of Synthetic Vitamins of B Complex. A. Brown.—p. 704.
Unusual Symptoms in Petrol-Tank Cleaners. Inder Singh.—p. 706.
Staphylococci in the Newborn: Their Coagulase Production and Resistance to Penicillin and Streptomycin. G. Martyn.—p. 710.

Maternal Obesity, Large Babies and Diabetes.—Gilbert cites reports which indicate that maternal obesity, an abnormally high fetal loss rate, and an unusually high incidence of large babies may occur many years before the onset of clinical diabetes, and that the investigation of women with such obstetric histories may show that a considerable proportion of them become diabetic in the course of time. Gilbert investigated 21 women with obstetric histories of unexplained abortions, miscarriages, intrauterine deaths, stillbirths and neonatal deaths, and the birth of babies weighing 10 pounds (4,536 Gm.) or more. Six of these patients were found to be diabetic. All 6 were grossly obese, and 5 had had babies weighing 10 pounds or more. Evidence is brought to show a correlation between progressive maternal obesity, the birth of unusually large babies and ensuing maternal diabetes. The clinical and experimental observations suggest that an excessive secretion of the anterior pituitary growth factor during pregnancy may account for the production of progressive maternal obesity, large babies and ultimate maternal diabetes.

Glossitis in Pernicious Anemia.—Brown describes 7 patients with pernicious anemia, each of whom had a sore, red, raw-looking tongue. One also had angular stomatitis and vascularization of the cornea. In each case it was possible to control these changes with a single member of the vitamin B complex in pure form. Four cases of glossitis responded to calcium pantothenate and 1 each to nicotinic acid and folic acid. One case responded first to nicotinic acid and later to riboflavin. The patient with glossitis, angular stomatitis and vascularization of the cornea responded to riboflavin. It is suggested that the epithelial changes described reflect a breakdown in some metabolic system which may be similar to that responsible for the megaloblastic marrow and the neurologic complications of pernicious anemia.

Journal of Pathology and Bacteriology, Edinburgh

60:529-660 (Oct.) 1948. **Partial Index**

Selective Medium for Isolating Staphylococcus Based on Differential Inhibiting Effect of Increased Concentrations of Sodium Chloride. H. B. Maitland and G. Martyn.—p. 553.
Toxic Effects of Salicylate on Fetus and Mother. A. V. Jackson.—p. 587.
Bacterial Variation and Toxin Production by Corynebacterium Diphtheria. C. R. Amies.—p. 595.
Redistribution of Body Fluids in Dysenteric Toxemia. R. D. Seneviratne.—p. 609.
Acute Parietal Endocarditis in Case of Status Asthmaticus: Possible Early Stage of Löffler's Endocarditis Parietalis Fibroplastica with Eosinophilia. B. Lennox.—p. 621.

Lancet, London

1:677-718 (April 23) 1949

Reorientations in Neurology. C. Symonds.—p. 677.
Effect of Diethylstilbestrol on Urinary Excretion of Pregnanediol and Endogenous Estrogen During Pregnancy. I. F. Sommerville, G. F. Marrian and B. E. Clayton.—p. 680.
Idiopathic Renal Acidosis in Infant with Excessive Loss of Bicarbonate in Urine. T. Stapleton.—p. 683.
Preparation and Standardisation of Saccharated Iron Oxide for Intravenous Administration. J. A. Nissim and J. M. Robson.—p. 686.
Case of Louping-Ill in Man: Isolation of Virus. E. G. Brewis, C. Neubauer and E. W. Hurst.—p. 689.
Water-Soluble Vitamin K in Newborn. R. R. Gordon.—p. 692.

Medical Journal of Australia, Sydney

1:369-396 (March 19) 1949

Fetal Losses in Child Birth. W. I. Hayes.—p. 369.
Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects. C. Fortune.—p. 373.
Some Clinical Aspects of Rheumatic Fever. K. Maddox.—p. 375.
Present Status of Penicillin Therapy in Treatment of Subacute Bacterial Endocarditis. D. J. Thomas.—p. 377.
Role of Sulphanilamide Prophylaxis in Rheumatic Fever. L. Stokes.—p. 379.
Treatment of Hernia. C. H. Leedman.—p. 380.

1:397-432 (March 26) 1949. **Partial Index**

Surgery in Ulcerative Colitis. A. E. Coates.—p. 397.
Ulcerative Colitis: Ileostomy Life. E. E. Dunlop.—p. 399.
Ulcerative Colitis: Clinical Features, Diagnosis and Treatment. G. A. Penington.—p. 405.
Indications for Tonsillectomy. S. Suggit.—p. 409.
Infantile Cerebral Palsy. C. Burton-Bradley.—p. 413.
Encephalitis and Encephalomyelitis. G. C. Moss.—p. 414.

South African Medical Journal, Cape Town

23:261-284 (April 9) 1949. **Partial Index**

Prefrontal Leukotomy Studies: Report. A. S. van Coller.—p. 261.
Medico-Legal Section: Professional Secrecy. N. C. Masters and H. A. Shapiro.—p. 267.
*Gouty Diathesis: Special Reference to Indians in South Africa. N. Finn.—p. 276.

Gouty Diathesis.—Finn says that gouty (uric acid) diathesis is not infrequent among Indians (Mohammedan as well as Hindu) residing in South Africa. Because Hindus are affected in about the same proportion as Mohammedans, the accepted theories of the past about the causation of gout should be revised. The Mohammedans usually abstain from all alcohol and the Hindus abstain from all animal protein. The blood uric acid level is raised in a large proportion of cases, but not every case of hyperuricemia exhibits clinical signs of gout. The blood sedimentation rate was usually increased in the acute and subacute cases, while it was normal in most of the chronic cases. Gouty arthritis may start in any joint. The polyarticular type is common. From clinical observations the writer is of the opinion that the gouty diathesis is caused by some liver dysfunction. Colchicum is the only drug effective in acute cases and of value also in chronic cases of the gouty diathesis. Its pharmacologic action is not clear, but the writer is inclined to suggest that it acts on the liver cells. Brewers' yeast in large doses proved beneficial and should be taken over many weeks. For swelling and pain of feet and hands galvanic baths are recommended. The diet should be a high protein and high carbohydrate one, fat intake to be reduced to a bare minimum. The majority of gouty patients seen by the writer were not affected by changes in the weather.

Beiträge zur klinischen Chirurgie, Berlin

177:1-152 (No. 1) 1948. Partial Index

*Clinical Significance of Diastase Values in Urine for Detection and Treatment of Disorders of Biliary Tract. H. Nusselt.—p. 1.
Fractures of Humerus Near the Elbow in Children (Supracondylic Fracture). A. Büttner and A. Vorwerk.—p. 51.
Indication for Surgical Treatment of Old Gunshot Wound with Missile Lodged in Knee. W. Lambrecht.—p. 77.
Pathogenesis of Acute Suppurating Osteomyelitis and Its Relations to Diagnosis of Acute Concussion and Contusion of Bone. A. Vogl.—p. 113.
Suppurating Gunshot Injuries of Bones. C. Ritter.—p. 93.
Surgical Treatment of Impacted Ureteral Calculus. W. Brosig.—p. 121.

Diastase Content of Urine in Diseases of Biliary Passages.—Nusselt mentions the sites at which diastase is produced and states that it is secreted chiefly into the digestive tract. A portion enters the blood stream and is eliminated in the urine. He discusses fluctuations in the diastase content of the urine in healthy subjects, the determination of the diastase according to the method of Wohlgemuth and the behavior of the diastase in pathologic processes in the neighborhood of the pancreas, particularly the causal connection between biliary calculi and acute disorders of the pancreas. The behavior of the diastase content of the urine was studied in various disorders of the biliary passages. Greatly increased diastase values in the urine are usually due to the pancreas. Pathologic processes in neighboring organs, such as duodenal ulcer, peritonitis or epidemic parotitis, may also be accompanied with increase in diastase. With these conditions ruled out, diastase determinations together with the clinical picture and other functional tests are of great value in the diagnosis and treatment of disorders of the biliary tract. Involvement of the pancreas in biliary disturbances is characterized by early "deviation of the ferment" and later by fluctuations in the diastase values. These are warning signals that the pancreas is threatened and indicate the need for surgical treatment if gallstones are present. Simple irritation of the pancreas, which differs from actual involvement, is characterized by "deviation of the ferment" and usually leads to considerable diastasuria. Necrosis of the pancreas is nearly always accompanied with considerable increase in diastase values. Careful investigations of diastase values in the course of biliary disorders reveal the subsidence of pancreatic lesions and determine the time at which an operation should be carried out so as to guard against surgical failures brought on by cardiac and circulatory insufficiency resulting from a pancreatic lesion. In the treatment of the pancreatic involvement before or after operation for cholelithiasis, the author has found the exclusion of the nutritional reflex of great value; this is accomplished by avoiding the intake of foods and fluids by the natural route. Investigations of the diastase values in 896 patients with biliary or pancreatic disorders revealed the highest incidence of preoperative increase in urinary diastase in choledocholithiasis. In the absence of contraindications choledochotomy is therefore advisable in these cases.

Bibliotek for Laeger, Copenhagen

141:1-40 (Jan.-Feb.) 1949

*Brief Review of Medicamental Treatment of Tuberculous Infection. S. Dahl.—p. 1.

141:41-88 (March-April) 1949

*Brief Review of Medicamental Treatment of Tuberculous Infection. S. Dahl.—p. 41.

Medical Treatment of Tuberculous Infection.—Dahl concludes that every preparation which can produce a stimulating effect and is applied in noninjurious doses can in "suitable" cases exert a favorable action on the course of pulmonary tuberculosis but almost never on tuberculosis of the larynx, lupus or surgical tuberculosis. According to the literature it appears that "suitable" cases are those in which the disease would subside with adequate dietetic hygienic treatment. It is possible that more patients with pulmonary tuberculosis can be benefited by the metal drugs available than could be benefited by earlier agents, such as creosote, guaiacol, iodoform and sodium cinnamate, but the literature on the subject is not especially convincing. The author suggests that, if metallic salt treatment is to be used in patients with pulmonary tuberculosis a metal should be chosen that is a natural constituent of the organism, as copper or iron. In suitable cases, he says, their action is favorable and gives fewer or no by-effects. Whether sulfonamide treatment is applicable in tuberculosis remains to be seen. The vitamins have a favorable effect on the course of tuberculosis. Penicillin is without effect. Streptomycin has a certain effect on tuberculous infection and can be said to be an antituberculous substance. The results of its use, however, are still so contradictory that it is too early to pass definite judgment.

Gynaecologia, Basel

127:201-272 (April) 1949

Investigations on Endometrial Sterility. J. Botella-Llusia, F. Nogales-Ortiz and E. Vilar-Dominguez.—p. 201.
Etiology of Primary Amenorrhea. O. Kaeser.—p. 220.
Capillary Permeability, Serum Proteins and Hematocrit Values in Normal Pregnancy. F. E. Szontagh.—p. 240.
*Diagnosis, Prognosis and Therapy in Tuberculosis of the Endometrium. E. Rabau, J. Herman and J. Casper.—p. 248.
Determination of Hormones in Late Gestoses. E. Eichenberger and O. Käser.—p. 255.

Tuberculosis of Endometrium.—Rabau and co-workers eight years ago began to resort to endometrial biopsy in all women who requested treatment for sterility. Endometrial biopsy was performed in 1,300 sterile women, and in 59 of these endometrial tuberculosis was discovered. Some of these women had normal menstrual cycles and patent fallopian tubes, but none of them became pregnant. Most other investigators who studied endometrial tuberculosis found that it is associated with sterility. No treatment has yet been found to cope with this disease. In general, it remains quiescent, without a tendency to spread, provided the endometrium has not been unnecessarily disturbed. Any action inside the uterus is ill advised and may cause the disease to spread, especially endometrial biopsy, pertubation and salpingography. Although there may be a justification for endometrial biopsy to ascertain the diagnosis, there is none for other measures after the disease has been diagnosed. In most cases tuberculosis of the endometrium remains quiescent, but there are cases where caseation occurs or in which the disease tends to spread. Spontaneous recovery is also possible. Radical operation is advisable if caseation is present.

Maandschrift voor Kindergeneeskunde, Leyden

16:453-484 (No. 11) 1949. Partial Index

Congenital Ectodermal Dysplasia: Herpes Infection of Mother as Possible Cause. S. van Creveld and C. van Waalwijk van Doorn.—p. 453.
Megalocardia of Unknown Cause. O. A. Driessen.—p. 460.
*Cirrhosis of the Liver in Nurslings. A. Dekker-Jonker.—p. 465.
Celiac Syndrome. Y. M. Trap.—p. 469.
Acute Virus Myocarditis: Case. D. P. R. Keizer.—p. 475.

Cirrhosis of the Liver in Nurslings.—Dekker-Jonker presents observations of 2 nurslings who were the first children of a healthy couple. Both children died, one after six weeks and the other after eighteen days of life. Both had glycosuria and enlargement of the liver. Necropsy revealed fatty degeneration and beginning necrosis in both. Syphilis had been ruled out. There was no antagonism in the Rh factor in the parents. The bile passages were not obstructed, and no other congenital defects were present. The author believes that the cirrhosis must have had an intrauterine onset. He directs attention to reports in which dietary deficiencies are suggested as probable causes of cirrhosis of the liver and suggests that in further pregnancies the mother of these children be given a diet with high protein and low fat content.

Praxis, Bern

38:319-338 (April 14) 1949

Psychic Hygiene in Sphere of Work of Practitioner. H. O. Pfister.—p. 319.
*Tuberculosis of the Pancreas. E. Witzig.—p. 325.
Clinical Application of Extract Preparation "Resactor"; Contribution to Study of Indication Limits and Report on Results of Resactor Treatment in Cases of Weak Reticuloendothelial System. H. Felberbaum.—p. 328.

Tuberculosis of the Pancreas.—Witzig reports 8 cases of tuberculosis of the pancreas in 6 women between the ages of 16 and 60 and in 2 men aged 21 and 45. Both general and specific lesions may be observed. General lesions may appear as interstitial sclerosis or true pancreatic cirrhosis, perilobular, pericanalicular or perivascular, frequently associated with fatty degeneration. The specific lesions are manifested by granulations or miliary nodules localized in the vascular stroma or interlobular interstices, by small cavities with caseation, by cold abscesses or by pseudoneoplastic tuberculous lymphoma. The lymphoma is the only lesion in which surgical treatment may offer a chance of success. Biopsy may be of considerable aid in the diagnosis of this type. The symptoms are those of digestive disturbances, pain and pigmentary disturbances such as melanoderma. Depending on the predominance of one or several of these symptoms, five clinical types may be distinguished: icteric, diabetic, dyspeptic, neoplastic and painful; pure or mixed types may be observed. Diagnosis of tuberculosis of the pancreas, particularly in the early stages, is difficult. The course of the disease is chronic, and progressive. Treatment is symptomatic. Surgical treatment is justified for the pseudotumoral forms. Lymphomas of small size may be extirpated. Removal of the tail of the pancreas does not involve great risk, but prognosis is guarded for the surgical removal of the head of the pancreas.

Presse Médicale, Paris

57:325-340 (April 9) 1949

Aureomycin. L. de Gennes and H. Bricaire.—p. 325.
Polymyxin: Its Action on Gram-Negative Organisms. E. Benhamou.—p. 327.
Chloromycetin. E. Farinaud.—p. 329.
*The Place of the New Antibiotics in Clinical Therapy. E. Benhamou.—p. 330.

The Place of the New Antibiotics in Therapy.—This general survey by Benhamou on the new antibiotics is preceded by three separate reports on aureomycin, polymyxin and chloromycetin. In the general survey the author stresses that, although the antibiotics have revolutionized the treatment of infections, they present certain shortcomings and leave certain gaps, particularly in infections wtih rickettsias or viruses and in certain infections due to gram-negative organisms, such as Eberthella typhosa and Hemophilus pertussis. In cases in which resistance develops to penicillin or streptomycin, bacitracin can be used. There is a place for polymyxin and especially for chloromycetin® and aureomycin, drugs which can be administered orally and are effective against disorders refractory to the sulfonamide drugs, penicillin and streptomycin.

Scalpel, Brussels

102:355-378 (April 16) 1949

Early Treatment, Important Factor in the Campaign Against Tuberculosis. H. Masson.—p. 355.
*Does Vaccination Reduce Diphtherial Mortality and Lethality? R. Rendu.—p. 358.

Vaccination and Mortality from Diphtheria.—Rendu says that certain authors maintain that the use of toxoid has greatly reduced the number of deaths from diphtheria and that if diphtheria develops in vaccinated persons it almost never results in death. In order to verify this, the author investigated records of numerous countries. The mortality rate from diphtheria has greatly decreased in certain countries in which vaccination against diphtheria has not been practiced at all or only on a small scale. In others, such as the United States and Canada, where vaccination against diphtheria is extensively employed, the number of deaths has likewise declined. This reduction probably cannot be attributed to vaccination because the decline had started earlier and it has continued even though the proportion of vaccinated subjects in the child population was too small to have influenced the mortality curve. In many of the cities and countries in which diphtherial vaccination has been most extensive, the mortality and morbidity rates have hardly changed. In some localities (Belgium, Copenhagen, Geneva and Montreal) the morbidity has even increased since the introduction of vaccination. In the cities and countries, in which a decrease of the mortality rate has more or less coincided with a campaign for vaccination (the United States, Canada, England, Scotland and France), the downward curve has been as noticeable in nonvaccinated adults as in vaccinated children. Vaccination seems to have influenced neither the mortality nor the morbidity rates of diphtheria. This would seem to prove its inefficacy, since it would be better to refer to mortality statistics than to those of morbidity in order to judge the value of a vaccine.

Schweizerische medizinische Wochenschrift, Basel

79:353-372 (April 23) 1949. Partial Index

*Treatment of Tuberculosis with PAS (Paraaminosalicylic Acid), with Particular Consideration of Bronchial and Renal Tuberculosis. R. Hug, S. Moeschlin and E. Tanner.—p. 353.
Diagnosis, Symptoms and Operative Therapy of Pheochromocytoma; Histamine Test and Dibenamine. O. Spühler, H. Walther and W. Brunner.—p. 357.
*Remarks on Dehiscence of Abdominal Wounds. A. Mayer.—p. 361.
Irreversibility of Certain Hereditary Manifestations. U. Pfandler.—p. 363.

Paraaminosalicylic Acid in Tuberculosis.—Hug and co-workers treated 5 patients, 3 men and 2 women between the ages of 20 and 43, with ulcerating tracheobronchial tuberculosis with paraaminosalicylic acid by mouth. The drug was given in tablets, 12 to 15 Gm. per day for four days and then again after an interval of four days. The total dose varied from 230 to 965 Gm. One of 2 patients who had not received any treatment previously recovered, and the other was improved considerably as demonstrated in endoscopic examination. In 1 of 2 additional patients who had been treated previously with streptomycin, resulting only in a partial involution of the ulcerative process, spectacular improvement was obtained with paraaminosalicylic acid; in the second patient a preliminary clinical recovery resulted from treatment with paraaminosalicylic acid. The fifth patient had a severe recurrence of ulcerating bronchial tuberculosis after streptomycin therapy had been discontinued; recovery resulted from treatment with paraaminosalicylic acid. Paraaminosalicylic acid is indicated in cases in which a cure of the specific ulcerous process of the mucous membranes in the tracheobronchial system cannot be obtained with streptomycin. Two men aged 25 and 26 with tuberculosis of the kidney were treated with paraaminosalicylic acid. The effect of the drug on the tuberculous process in the kidneys was questionable, but the accompanying tuberculosis of the urinary passages was favorably influenced. Recent tuberculous lesions in the urinary bladder heal more rapidly, while older lesions react less favorably. Favorable results obtained previously with paraaminosalicylic acid in cases of pulmonary tuberculosis were corroborated.

Dehiscence of Abdominal Wounds.—Mayer reports 18 cases of dehiscence of abdominal wounds in women. Dehiscence is not a local occurrence of the wound area but the local expression of general damage inflicted on the organism. The dehiscence was complete in 8 patients and partial in 10. There was no suppuration. In 15 of the 18 cases the peritoneum separated, allowing prolapse of the intestines in 9 cases, prolapse of intestines and of the omentum in 2 and of the omentum in 1. Eleven patients recovered, and 7 died. The cause of dehiscence is not known. The kind of sutures and the method employed do not play a decisive part. The incidence of dehiscence of abdominal wounds has increased considerably during the war and the postwar years. It is not known whether quantitative or qualitative undernourishment or vitamin deficiency was responsible. Dehiscence of abdominal wounds is a severe postoperative complication, the high mortality rate of which may be reduced in the future by early administration of penicillin.

Book Notices

Clinical Toxicology. By Clinton H. Thienes, M.D., Ph.D., Professor of Pharmacology and Head of the Department of Pharmacology and Toxicology, School of Medicine, University of Southern California, Los Angeles, and Thomas J. Haley, Ph.D. Second edition. Fabrikoid. Price, $4.75. Pp. 373, with 9 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1948.

The authors in the second edition deviate little in their original intent, namely, a book useful both as a guide to the general practitioner and as a text in the classroom. Intimate details are avoided in the discussion of the pharmacy, chemistry or general pharmacology of the drugs capable of acting as poisons. This edition groups and discusses the poisons according to the mechanism of action or the chief presenting symptom instead of following the usual chemical or alphabetic classification. That system may be more satisfactory to the student and physician but restricts the discussion of a poison from several considerations.

About three fourths of the book discusses the toxicology of poisons, diagnosis and treatment in a fairly adequate manner. The book has been somewhat expanded to include chemicals which have been put to increasing use since the last edition, such as the chlorinated solvents of ethane. Still omitted, however, are discussions of the poisonous effects of chlorine, sulfur dioxide, potassium permanganate; yet tenaciously retained are considerations of absinthe and poke root poisoning. The sulfonamide drugs are adequately considered, and space is also devoted to penicillin. The remainder of the book is concerned with symptoms and chemical diagnosis of poisoning, the latter including satisfactory qualitative and quantitative methods for the detection and estimation of certain poisons.

The absence of any appreciable bibliography is noteworthy; however, many of the analytic methods give the original reference. The illustrations are few but pertinent.

This small book is satisfactory in providing a brief text for medical students and clinicians. It includes a surprisingly large amount of material condensed in a highly useful form.

Temperature and Human Life. By C.-E. A. Winslow and L. P. Herrington. Cloth. Price, $3.50. Pp. 272, with 40 illustrations. Princeton University Press, Princeton, N. J., 1949.

The column of mercury in a thermometer is a slender finger of fate influencing mankind's clothing, eating habits, diseases, comfort, available energy and achievements. These influences of temperature on human life form the basis of this publication from the John B. Pierce Laboratory of Hygiene in New Haven, Conn., and represent the winnowed product of sixteen years of investigation since the establishment of the laboratory in 1933. Chiefly, this publication is concerned with the production of heat in the body, the avenues of heat loss, the measurement of metabolism with emphasis on "partitional calorimetry," man's adaptation to varying thermal conditions, factors influencing clothing, the purposes of air conditioning, methods for the procurement of air conditioning and an equally engaging section devoted to climate and season in relation to health.

This book has the quality of being both highly technical and highly readable. In a single paragraph reference is made to the influence of Einstein's concept of energy and to Alice in Wonderland's "Red Queen's" cantankerousness. Without fully accepting the conclusions deriving from Ellsworth Huntington's monumental work, the present authors find much to praise. Ultimately, from their total observations, the authors conclude: (1) Extreme heat or cold lead directly to fatalities, and even such temperature variations as occur in the United States may increase general mortality rates to double their normal volume (as demonstrated in the "hot week" of 1934). (2) Minimum mortality rates occur with a daily mean temperature of 60 to 70 F. and with a mean daily relative humidity of 60 to 80 per cent (at a figure perhaps lower than the 80 per cent of Huntington). (3) Industrial production and intellectual and social achievement are also highest in climates and at seasons where such conditions as those previously cited prevail. The general level of such achievement appears to be definitely favored by the stimulus of moderate (but not extreme) variations toward the colder side of the optimum range. (4) The human body displays regular annual rhythms of physiologic activity as displayed by variations in blood chemistry, in endocrine activity and in resistance to poison and to disease, which are little understood but which are perhaps related to the late winter peak of mortality. (5) Seasonal and climatic variations in morbidity from the communicable diseases are particularly significant and always tend to show an increase in intestinal infections under hot conditions and an increase in respiratory infections under cold conditions.

This book might well have been addressed to the industrialist, the physician, the architect, the clothing manufacturer or the epidemiologist. It beckons to intelligent persons everywhere.

Experimental Immunochemistry. By Elvin A. Kabat, Ph.D., Associate Professor of Bacteriology, College of Physicians and Surgeons, Columbia University and the Neurological Institute, New York, and Manfred M. Mayer, Ph.D., Associate Professor of Bacteriology, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore. With a foreword by Michael Heidelberger, Ph.D., Professor of Biochemistry, College of Physicians and Surgeons, Columbia University, New York. Fabrikoid. Price, $8.75. Pp. 567, with 88 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Illinois, 1948.

Immunology has but recently emerged from adolescence into maturity. This emergence has been made possible by the application of precise quantitative methods to the study of antigens and antibodies. These methods involve technics utilized in the biologic sciences, in physics, in physical chemistry and in analytical chemistry. The utilization of these methods has brought about a rapid and vigorous growth in the knowledge concerning the mechanisms of immunity. Many of the quantitative technics employed in immunity have been developed for the most part by Dr. Michael Heidelberger and Dr. Forrest E. Kendall.

Because of the far reaching and fundamental advances that have been recently made in the field of immunochemistry, Kabat and Mayer's book has come forth at the psychological moment when it becomes imperative to assemble under one cover the newer technics and the newer knowledge in the field of immunology.

To give the reader an idea of the wideness of the area of modern immunological science, admirably, skilfully and concisely condensed into one small volume, it is necessary briefly to give the arrangement of the subject material followed by the authors. The book is divided into four main parts. Part I deals with immunological and immunochemical methodology and is subdivided into chapters discussing the following topics: the precipitation reaction, agglutination, complement and complement fixation; anaphylaxis and allergy, and antibodies and their characterization.

Part II is devoted to the applications and uses of quantitative immunochemical methods involving the estimation of antigens, immunochemical criteria of the homogeneity of proteins and of carbohydrates, cross reactions, and the effects of chemical treatment in altering the immunochemical properties of proteins and polysaccharides. Part III is designed to acquaint the student or investigator with the quantitative chemical and physical procedures employed in immunology. Among the chemical technics described are the estimation of nitrogen by the Kjeldahl method, the estimation of amino nitrogen, acetyl groups, carbohydrates and carbohydrate derivatives, such as glucosamine and the uronic acids, the estimation of protein and the estimation of enzyme activity. Among the physical procedures are included electrophoretic analysis, ultracentrifugal analysis, diffusion, viscosity and solubility methods, dialysis, ultrafiltration, ultraviolet absorption spectrums, and optical rotations.

Part IV presents the methods involved in the preparation of biochemical substances that have immunological implications. Directions are given for the purification of antibodies and for the preparation of crystalline hen's egg albumin, crystalline serum albumin, gamma globulin, crystalline oxyhemoglobin, thyroglobulin, Bence-Jones protein, azo proteins, acetyl and malonyl proteins, phosphorylated proteins, phenylureido proteins, carbenzoxy and other acid chloride derivatives of proteins, diphtheria toxin, bovine type antigens, pneumococcic type-specific polysaccharides, d(–)-glutamyl polypeptide, and the blood group factors A, B, and O.

The authors are well qualified to write a book on immunochemistry because they themselves are investigators in this field. Much of the material in part III and in part IV has been taken from their personal experience. They have produced a book which is well organized, simple and clear in language, and lucid in style. The directions for the various procedures are presented briefly and can be readily followed even by a novice in the field. While the book has been designed for the experimentalist, it is by no means devoid of theoretical considerations. Kabat and Mayer's work may well serve as a model for writers of scientific texts.

The book may be used to great advantage in a theoretical and practical course in immunochemistry. It meets the needs of chemists who may not be thoroughly familiar with immunology and the needs of bacteriologists, serologists and immunologists who may not be well acquainted with microchemical technics. The book may be read to advantage by medical scientists of any description and by clinicians desirous of keeping abreast of progress in the medical sciences.

Detailed Atlas of the Head and Neck. By Raymond C. Truex, M.S., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York, and Carl E. Kellner, Artist, Department of Anatomy, College of Physicians and Surgeons, Columbia University. Oxford Medical Publications. Cloth. Price, $15. Pp. 162, with 136 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1948.

This atlas is composed of four parts: regional anatomy, skeletal structures, frontal sections and transverse sections. Part one consists of dissections of the various regions of the head and neck, which are made by layers from superficial to deep structures. A commendable feature of the anterior neck dissections is the inclusion of the thoracic structures, heart, lungs and great vessels in order to portray continuity of structure. The dissections of the nervous system present several original aspects. The orbital, nasal, pharyngeal and laryngeal dissections are, on the whole, along the usual pattern found in other texts. They are, however, clearly depicted, and two in particular deserve mention. The orbit and infratemporal fossa show the middle ear structures and their relations. Part two demonstrates the bones of the head and neck and presents nothing unusual. Part three is well done, and the sections along with the labeled inserts give to this atlas an uniqueness that is found in none other of its size. The treatment of part four might be confusing were it not for the small figure included for orientation with alternate plates. An excellent opportunity was lost by the authors in not more clearly depicting the deep cervical fascia.

The terminology of the atlas has been completely anglicized, a fact that might be deplored by some; however, this seems to be in keeping with the current terminologic trends and is not a detracting factor. On the whole, this excellent, accurate atlas presents the ultimate in cooperation between an anatomist and an anatomic artist.

Notfallchirurgie: Die Ausführung der dringlichen blutigen Eingriffe. Von Prof. Dr. Adolf Ritter, Direktor des Thurg. Kantonsspitals Münsterlingen. 63. Band, Neue deutsche Chirurgie. Begründet von P. v. Bruns. Herausgegeben von Ferdinand Sauerbruch. Second edition. Cloth. Price, 46 marks. Pp. 514, with 350 illustrations. Ferdinand Enke, Hasenbergsteige 3, Stuttgart, W, 1949.

The second edition of emergency surgery by Adolph Ritter has just appeared "improved and augmented" over the 1940 first edition. According to the author the field of emergency surgery covers not only those conditions which start as emergencies but also what would have been minor surgical conditions had they not been neglected. Thus, to include the entire subject in one volume, it is necessary that certain phases be omitted.

The author has chosen to dwell on the operative technic and to omit the discussion of diagnosis and postoperative treatment. Preoperative treatment—getting the patient in the best possible condition for surgery—is discussed only very briefly. From the point of view of introducing this foreign text into the American market this choice of handling the subject is unfortunate. The American readers have available many excellent texts on operative surgery. The operative procedure for a gastric resection is similar whether the resection is done for a duodenal ulcer which is bleeding or one which is not bleeding. Important in such an instance is: What makes one operation an "emergency" and the other elective? Furthermore, it is even more important to know what can be done to the bleeding patient to bring him to the operating room in the best possible condition. If the reader is looking for this type of information he will be disappointed in the Ritter book. If the reader is interested, however, in how to perform the necessary operation, he will find in the book good, concise descriptions of standard procedures well written and well illustrated.

Handbook of Surgery. By Eric C. Mekie, M.B., Ch.B., F.R.C.S., Professor of Clinical Surgery, King Edward VII College of Medicine, Singapore, and Ian Mackenzie, M.B.E., M.B., Ch.B., First Assistant, Department of Surgery, University of Durham, Durham, England. With a foreword by the late Sir John Fraser, Bart., M.C., M.D., Ch.M., Second edition. Cloth. Price, $6. Pp. 704, with 29 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

This is the second edition of a book popular with medical students in England and particularly in Scotland. As the title indicates, it is a handbook, or compend, based on the lecture notes used by the authors in teaching a course of review preparatory for final examinations. In this comparatively small volume the entire field of surgery is covered briefly, but rather completely and well. Only the salient features of a subject are presented. Sufficient explanatory matter, however, is added so that the subject may be understood and easily remembered. There is nothing original in the presentation. The material is up to date, accurately presented, inclusive in detail and yet sufficiently concise to be appreciated and digested within a reasonable time. The book is recommended to undergraduates, for whom it is intended.

Coronary Artery Disease. By Ernst P. Boas, M.D., Associate Physician, Mount Sinai Hospital, New York City, and Norman F. Boas, M.D. Cloth. Price, $6. Pp. 399, with 88 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1949.

This book opens with a description of the anatomy of the coronary circulation and continues with the embryology of the coronary vessels. The physiology of the coronary circulation comes next and then pathology of the coronary arteries and the resultant cardiac lesions. Coronary artery sclerosis, coronary insufficiency, angina pectoris and coronary occlusion are liberally discussed. Myocardial infarction receives its fair share of attention. Electrocardiography is well represented throughout. The book is a collection of the opinions of most of the authorities on the subject and includes the authors' personal views. Whenever controversial matters arise, and there are many, the authors settle the controversy with their own opinion, with which, of course, everyone will not agree.

Apparently the authors have not been greatly impressed with the V leads of the electrocardiogram. They mention them in a footnote but show no examples. Contrariwise, they have been rather impressed with anticoagulant therapy in myocardial infarction and state that such therapy should begin as soon as the diagnosis is made. They do not mention some of the difficulties, such as the inability of doctors to obtain determinations of prothrombin levels in certain localities.

The authors appear to handle their statistics carelessly in places. They quote to show that cardiac rupture occurs in 9 per cent of cases of myocardial infarction coming to autopsy in a large hospital. Later they state that rupture of the heart is responsible for the death of 9 per cent of the patients who die from myocardial infarction. Obviously, both statements cannot be correct.

In discussing the death rate following myocardial infarction, the authors state that the death rate will vary depending on whether the treatment is carried out in the hospital, the home or in the office. They do not say how it is possible to treat an acute myocardial infarct in the office. Even the advisability of treatment in the home may be questioned. The book was apparently in press before the lithium intoxication from west-sal® (contains 25 per cent lithium chloride, 0.01 per cent potassium iodine and 0.2 per cent citric acid) occurred. The authors recommend "west-sal"® as a salt substitute.

The book is an excellent review of the knowledge of the coronary circulation. It quotes a great number of authorities; nearly everything pertinent to the coronary circulation is mentioned. Probably a book of this type could never please everyone; this book is no exception.

Everyday Psychiatry: Concise, Clinical, Practical. By John D. Campbell, M.D., Psychiatrist to St. Joseph's Infirmary and Crawford W. Long Hospital, Atlanta, Ga. Second edition. Cloth. Price, $6. Pp. 394. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2, 1949.

The second edition of this book has more practical utility for civilian medicine than did the first, which was largely oriented to military problems. Since the book is directed to workers outside the specialty, particularly to general physicians, medical students and social workers, the author does not attempt an all-inclusive coverage of psychiatric problems. He wisely focuses attention on the vast borderlands of psychiatry. He speaks of mental and behavioral aberrations most likely to be encountered in general practice, of those not clearcut or incapacitating enough to occasion hospitalization. The entities with which he deals include mental deficiency, psychopathic personality, psychoneurosis, psychosexual deviations, schizoid and cycloid personalities, involutional pictures and chronic alcoholism. The section on involutional syndromes is new and certainly belongs in a book of this kind. The author points out that the involutional process is one of the most neglected and poorly understood subjects in medicine.

An effective job has been done in integrating the substantial elements of the various schools of psychiatric thought into a practical system. The author recognizes the validity of basic Freudian concepts in medical psychology; at the same time he dissociates himself from those who would make all psychoanalytic interpretations basic and etiologic. He believes that constitutional and physical factors must be recognized also as fundamental to an etiologic attack.

That the constitutional emphasis is not incompatible with affirmative therapeutic goals is well brought out in these pages. The author's approach is broadly eclectic. He provides much helpful information on the diagnosis, evaluation and handling of problems which recurrently confront the general practitioner. The book is scarcely a textbook, since it deals only with the middle segment of psychiatry, and it deals with this in a highly individualistic manner. The author presents a psychiatry which he has found valid in everyday clinical testing. As such, it has much to recommend it.

Diseases of the Liver, Gallbladder and Bile Ducts. By S. S. Lichtman, M.D., F.A.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York. Second edition. Cloth. Price, $18. Pp. 1135, with 149 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1949.

Great expectations preceded the new edition of this book. The first edition presented a well organized review of our clinical knowledge as well as of the normal and pathologic physiology and morphology of the hepatobiliary diseases. Since 1942, new information has accumulated. The integration of this newly acquired knowledge in the new edition has been accomplished in an admirable fashion. The experiences of the war with acute hepatitis, newly acquired information as to the histopathologic changes of the liver resulting from the widely expanded use of liver biopsy, progress in hepatic tests derived from increased knowledge of hepatic physiology, advances in medical treatment in general and the use of antibiotics specifically and the new surgical technics are all well presented in this second edition. As cannot be avoided in a field with such extensive ramifications as that of the diseases of the liver, not all aspects are given the degree of emphasis which some readers may desire and some of the newer pathophysiologic observations are not as well integrated as others. The second edition can be recommended even more than the first to all who desire authoritative information on the liver and gallbladder.

Submicroscopic Morphology of Protoplasm and Its Derivatives. By A. Frey-Wyssling, Professor of General Botany at the Federal Institute of Technology, Zurich. Translated by Prof. Dr. J. J. Hermans and Miss M. Hollander. Cloth. Price, $6. Pp. 255, with 161 illustrations. Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, 1948.

This translation from the second German edition of an exceedingly fine book presents a study of submicroscopic morphology. The author correlates the data available on submicroscopic structure of protoplasm with known chemical structures and phenomena and their inherent physical properties. The methods, technics and instruments used in carrying out such investigations are explained in detail; at the same time the limits of practical use for the methods used are stressed. The text is organized into three sections: fundamentals of submicroscopic morphology, which includes a discussion on the organization of sols, principles of structure of ions, atoms and molecules, structure of gels, and studies in gels; fine structure of the protoplasm, which includes discussions on cytoplasm, nucleus, chloroplasts and erythrocytes, and fine structure of protoplasmic derivatives, such as horny substances, muscle fibers, myelin sheath of the nerves, protein crystalloids and starch granules.

The numerous figures and sketches are well presented, and extensive references to the literature are included.

Army Medical Library Classification. Medicine: Preclinical Sciences Qs-Qz; Medicine and Related Subjects W. Preliminary edition, 1948. Paper. Pp. 479. U. S. Government Printing Office, Washington, D. C., 1949.

Accepted terminology is used in this classification. Synonyms, cross references and symptoms are included. Although designed primarily for large medical libraries, the book may be used to advantage in correlating medical libraries with medical record libraries in small institutions. The scheme of the etiologic section of the "Standard Nomenclature of Diseases and Operations" has been used in the grouping of diseases of specific anatomic structures. This makes it possible to use the disease nomenclature as a guide to the etiologic grouping of books on shelves. Hospital administrators may beneficially consider use of this classification in combining these two libraries.

La vida del enfermo y su interpretación: Anamnesis. Por Mariano J. Barilari y Leonardo Grasso. Pp. 302. Editorial "El Ateneo," Florida 340–Córdoba 2099, Buenos Aires, 1948.

"The Life of the Patient and Its Interpretation" is in two parts, written, respectively, by the two authors.

The first, written by Dr. Barilari, deals with a methodology which is his personal doctrine of a definitive psychosomatic orientation. He appraises all the factors which determine the individual disorder. Utilizing the knowledge of different specialties, the physician must gage the somatic, functional and social elements.

He emphasizes that the clinical picture is not only the aggregation of the somatic and psychic factors but also the integration of both. He called his school "Dynamic Integrated Medicine."

Dr. Barilari is a prominent Argentinian internist who is a member of the Argentina National Academy of Medicine. Dr. Barilari presents the material in a lucid, readable style with copious charts and diagrams.

The graphic expression of the especial individual pathology and its intrapsychic dynamics he calls the "schematic clinic"; in these respects the book is unique in Latin American literature. The authors further offer a method for comprehensive history taking and emphasize the need for lengthy, painstaking evaluation.

The second part, written by Dr. Grasso, is eminently practicable. Its chief object is orientation of the practitioner, by means of a basic questionnaire, of a pure psychosomatic methodology.

Primary Anatomy. By H. A. Cates, M.B., Professor of Anatomy, University of Toronto, Toronto Cloth. Price, $6. Pp. 478, with 392 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1848.

This practical volume is recommended for use in teaching nurses, physical therapists, occupational therapists and physical educationalists. It is written by one who has been in the field of teaching for many years. The book contains twelve chapters, and the anatomy is written systemically. This treatment presents some problems when the beginner who is without an adequate biologic background is confronted with regional dissections or dissection demonstrations. The chapters on the skeletal, articular, circulatory and nervous systems might seem too long and detailed, but the author is justified as these are important to the type of student for whom the text is intended. By the use of simple sketches and diagrams the author portrays vividly the important points of the various systems. Many of the sketches and diagrams could be more completely labeled.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

COLLAPSE FOLLOWING A BEE STING

To the Editor:—About nine months ago I was called to treat a 32 year old woman who had been stung on the right ankle by a honey bee. When I arrived, about twenty minutes after the sting, she was in acute collapse, cyanotic and unconscious, with low blood pressure, thready pulse and severe laryngeal edema. I gave her epinephrine intravenously, and she regained consciousness after about 0.75 cc. had been injected. She was sent to the hospital and was able to go home the next day. She had had no allergic history until about two years previously, when she started to have increasingly severe reactions from a bee sting. A desensitization course of treatment with mixed bee-yellow jacket venom was started. Because of her extreme sensitivity, the initial dilution was 1: 10,000,000. I reached her suggested maintenance dose of 0.5 cc. of 1: 10 dilution in January of this year and gave this amount each week for a month. I then lengthened the interval to two weeks and planned to continue this during the summer. During the course of injections she had no untoward reactions except pain and swelling at the injection site. Her husband, who is a bee keeper, brought some bees along with the patient, so that she could be stung in my presence to see whether she was protected. She was stung on the right arm, away from any superficial veins. She had just as severe a reaction as she had last fall. Within a few seconds, I noticed erythema around the site of the sting. She then complained of itching all over her body, and her eyes started to burn. The stinger was immediately removed having been in her skin about thirty seconds. She started to sneeze; asthmatic rales developed throughout her chest, and she felt her throat getting tight. I placed a tourniquet above the sting, injected 0.5 cc. epinephrine beneath the sting and 0.5 cc. epinephrine intramuscularly in the other arm. She continued to get worse; she became cyanotic, her pulse became thready and she was unable to speak. I gave her 0.5 cc. epinephrine intravenously and 1.5 cc. nikethamide (coramine®). She started to improve and was sent to the hospital; where she made an uneventful recovery. I wrote to the laboratory that prepared the vaccine and was told that the serum was probably not specific and that, if a pint of bees were sent to them, a vaccine would be prepared from them which should be adequate. Would you feel that a new desensitization regimen would be protective? In view of the patient's severe reactions, if she received more vaccine would it be advisable to have her stung again in the office or hospital? What is the relative amount of bee venom in 0.5 cc. of a 1: 10 dilution compared with that which is received in a sting from a honey bee? I have given the patient epinephrine "ampins," with instructions to inject one immediately if she is stung again and to place a tourniquet above the sting site. Is there anything more which you could suggest?

R. G. Neher, M.D., Shoshone, Idaho.

ANSWER.—Allergy, of the anaphylactic variety, to bee stings is not rare. A common misconception is that the allergen is found only in the venom. On the contrary, as a rule the allergen is widespread in all portions of the bee. Bee venom produces reactions because with it the bee antigen is injected and thus absorbed. In a number of instances the inhalation of some of the powder from dried wings and other parts of the bee has resulted in asthma.

Three possible explanations may be given for the failure of this patient to become protected to bee stings by desensitizing injections. 1. The antigen may not be specific. It may be that in this particular case there is a high degree of specificity which is not represented by the injection mixture. Was the patient tested with the material with which she was given injections? If she were, the diluted material, perhaps 1: 100 or 1: 1,000, should have been sufficiently potent to give a positive scratch reaction. If no reaction was present with such or higher concentrations, the material was either not specific or not potent. As a general rule, specificity in these cases is not of a high order, the reaction crossing over not only to various types of bees but even to ants.

2. The extract may be specific but lacking in potency. Various reasons may account for the final inactive preparation. This, too, could be determined by the testing suggested previously. The latter is not an unlikely possibility in view of the ease with which a presumed high dose level was achieved in treatment. One must say "presumed" because the information given by the inquirer does not furnish data on which to base the value of 1: 10. The manufacturer of the extract is the only one who could clarify this.

3. Insufficient immunity response to an active antigen is another possible reason for the facts cited. Even if the extract is potent, it does not by any means signify that sufficient protection can be induced for the clinical exposure involved. Perhaps it furnishes immunity for one fourth or one half of the antigen injected by the bee, but three fourths or a half or much less may be ample to produce the severe reactions described. If this situation prevails in spite of treatment with potent extracts, nothing further can be done. However, the facts at hand would indicate that the extract was not potent or not specific or an insufficient maximum dose was given.

Concerning the advisability of a planned bee sting under supervision, one could argue on both sides of the question.

Nothing else will take the place of an epinephrine injection. The injection of an antihistamine compound, such as diphenhydramine hydrochloride (benadryl®) or tripelennamine hydrochloride (pyribenzamine®) might follow the epinephrine. Aminophylline given intravenously may be desirable. If exposure is anticipated, the prior oral administration (preferably an hour before exposure) of an antihistamine drug might be helpful.

LYMPHOSARCOMA

To the Editor:—My son, aged 5½, had a lymphosarcoma in the postcervical nodes of his right side, which now has spread to the left side, mediastinum, axillas and both inguinal areas. I have been told by various roentgenologists to withhold roentgen therapy until the nodes are large enough to cause difficulty either in the mediastinum or elsewhere. I wanted to administer roentgen rays before the glands could develop to such proportions. What is your opinion? Is there any other method of treatment? Have the isotopes any value in lymphosarcoma?

William Offenkrantz, M.D., Brooklyn.

ANSWER.—There is a wide divergence of opinion concerning the method of treatment of lymphosarcoma. In young children it is usual to observe the development of a leukemic blood picture sooner or later in the course of the disease. It has been stated that this is likely to occur more rapidly after intensive roentgen therapy. However, it is well recognized that the lymphosarcomas of children are exceptionally radiosensitive, and it is reasonable to apply small doses of roentgen rays to affected areas.

In some cases, spray roentgen therapy has been employed, using as little as 10 to 15 r (measured in air) of 200 kilovolts per treatment. Treatments are given on alternate days, and the blood picture is followed carefully. Usually four or five such treatments can be tolerated, and they often produce a good remission.

This type of lymphosarcoma should be amenable to therapy with ethyl carbamate (urethane). In a 5½ year old child urethane may be given in doses of 0.5 Gm. three times a day. It is best dispensed in a solution, such as syrup of orange. If the white blood cell count falls below about 2,500, it is well to reduce the dose by one-half; but the drug should not be stopped unless serious gastrointestinal disturbances occur. It is important, when one uses urethane, to support the patient's red blood cell count with blood transfusion.

In the case cited urethane therapy probably should be started at once. Unless the lymph nodes are so large as to produce symptoms due to pressure, spray roentgen therapy as described should be used. If the nodes are to be treated locally, the doses should be smaller and the number of treatments fewer than would be used for Hodgkin's disease. Resolution of lymphosarcoma nodes is usually prompt, and this response is the best guide to therapy. Information concerning any satisfactory treatment employing radioisotopes in this type of patient is apparently not available.

SYPHILIS AND PREGNANCY

To the Editor:—A positive Kahn reaction of 128 units was found in a 20 year old girl. She had been married for four to six weeks. The husband's Kahn reaction was negative. There is some reason to believe that the primary infection had occurred eighteen months to two years prior to discovery of the positive Kahn reaction. Although the husband's Kahn reaction was negative and there was no evidence of infection, he was treated with 600,000 units penicillin in oil for ten days. His wife was treated with the same amount of penicillin, and with five injections of 2 cc. of bismuth subsalicylate in oil and ten injections of oxophenarsine hydrochloride, administered over a three week period. She is now between three and four months pregnant, the last menstrual period having occurred one month after the conclusion of treatment. At the end of treatment the Kahn reaction was 64 units. After two months it was 4 units. After four and one-half months, the Kahn reaction is now 16 units. Should she be retreated, and, if so, by what method?

M.D., Kentucky.

ANSWER.—A rise in the quantitative titer from 4 units to 16 units might or might not be indicative of serologic relapse. If the patient were not pregnant, it would be well, before instituting treatment, to check the serologic titer at intervals of two weeks to note whether the rise is sustained or progressive. Since she is pregnant, the safer course probably would be to treat her again with penicillin, 300,000 units daily for ten days, although some physicians prefer a daily dose of 600,000 units.

THEORY OF FOCAL INFECTION

To the Editor:—What is the present view regarding focal infection?

M.D., Virginia.

Answer.—The role of foci of infection as causes of systemic illness in general is still under discussion. Some authors invoke the work of Frank Billings (*Arch. Int. Med.* 9: 484, 1912), who described the principle of this pathogenetic mechanism but cautiously limited its clinical application. A critical appraisal after twenty-five years of study (Bierring, W. L.: J. A. M. A. **111**: 1623, 1938) indicates that the removal of focal infections does not cure the diseases attributed to them in significant numbers of patients. The discussion has been hampered by varying definitions of focal infection.

Acording to good evidence and universal experience, microbial infections of many types can spread from a latent and asymptomatic focus to cause general disease if the localizing factors are weakened (Rosenow, E. C.; J. A. M. A. 61:1947, 1913. Elliot, S. D.: *Proc. Roy. Soc. Med.* 32: 747, 1939; Freyberg, R. H.: *J. Am. Dent. A.* 33: 1108, 1946). It is also well established that toxins from an infected nidus may damage remote tissues. Likewise, there is abundant proof that hypersensitivity of certain tissues to focally infecting bacteria occurs, as demonstrated by commonly used skin tests. However, the question as to *whether bacterial products disseminated from a focus of infection* will cause generalized clinical illness or inflammation in previously sensitized organs cannot be answered for all cases. It should be applied to a given focus in an individual host. Recent work has furnished indirect evidence that bacterial products derived from foci of common infective bacteria, such as beta hemolytic streptococci, may participate in the pathogenesis of rheumatic fever, glomerulonephritis and certain vascular diseases. (Rich, A. R.: *Proc. Inst. Med. Chicago* 15: 270, 1945. Rantz, L. A.; Boisvert, P. J., and Spink, W. W.: *Arch. Int. Med.* 76: 131, 1945. Cavelti, P. A.: *Arch. Path.* 44: 119, 1947.)

Furthermore, it has been proved that recurrences of rheumatic fever can be prevented by the control of hemolytic streptococcic infection with antibiotics, although these agents do not benefit active rheumatic fever (Rosenberg, E. F., and Hensch, P. S.: *M. Clin. North America*, 30: 489, 1946). The causative role of focal infections in the common allergies has not been demonstrated in satisfactorily controlled studies and there is considerable doubt about their importance in the development and treatment of rheumatoid arthritis (Slocumb, C. H.; Binger, M. W.; Barnes, A. R., and Williams, H. L.: J. A. M. A. **117**: 2161, 1941). For practical purposes it is recommended that foci of infection be treated in chronic diseases if they constitute a likely handicap to the general health and resistance of the patient.

HALITOSIS

To the Editor:—Many patients without definite pathologic change in the paranasal sinuses or decayed teeth have halitosis. Some of them have a "sour" breath and others a "decayed" odor. Kindly outline the procedure for detecting the source of halitosis. In cases of intractable halitosis, what should be the treatment?

M.D., New York.

Answer.—Halitosis is by derivation "a condition of the breath," but is partly accepted in medicine to mean "foul or offensive breath." Miller lists fourteen distinctive unpleasant odors.

Halitosis may have many causes. Usually the cause can be found; often it can be corrected. Detection of the cause requires a survey of the list of possibilities, an examination of the patient and a decision on the probable source. Correction then depends on removal of the source if feasible or recurrent cleansing and deodorizing.

Foci in the upper and lower parts of the respiratory tract may not be obvious and can include bronchial infection, sinus infection, chronic nasal catarrh (or even atrophic rhinitis), adenoids and chronically diseased tonsils. The tonsils and adenoids may be removed; true infection may be treated in various ways after a differential diagnosis, including trial of an appropriate antibiotic.

The intestinal tract may be a source, with causes ranging from esophageal diverticulum, gastritis, cholecystitis and colitis to faulty fat metabolism. Gastrointestinal allergy is said to be a cause. Each requires its special correction. The excretion in the breath and in the saliva of odors produced by drugs is too obvious a cause to describe in detail. Smoking may contribute to both odor and oral irritation.

The mouth is the most probable source of fetor oris. Dental decay and dentures can be seen and cared for, but less obvious sources may be a low grade infection of the gums and the lingual papillae, the slight necrosis of the mucous membranes, minute collections of food and the numerous oral bacteria between gums and teeth (especially when tartar has gathered) and food in cryptic spaces between certain teeth. Protein can become rather foul in a few hours, and meat fibers are a frequent offender if not removed. Vincent's infection can usually be seen if present. Sluggish salivary secretion may cause oral stagnation.

Cleansing of the mouth should be started by a dentist, with recurrent later check-ups. In the intervals, food should be removed from crevices by brushing, rinsing, floss or picks at least once a day. Infection should be treated as indicated. The tone of the mucous membrane may be improved by use of a dilute mouthwash containing zinc chloride, perhaps preceded by one containing peroxide or perborate.

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RECURRENT HERPETIFORM LESIONS

To the Editor:—A 41 year old white man, married, with one child, has had recurrent small herpetiform type lesions on the mucous membranes of the gums, tongue, cheeks and palate since 1940. Prior to 1946 he had lived for fifteen years in England. He has been in the United States for three years. Onset of the lesions coincided with the onset of severe bombing in England in 1940. He has been entirely free of the lesions for only three months; this being during 1946 when he returned to England alone, his only separation from his family. The lesions improved while he received weekly injections of calcium gluconate in 1943-1944. Phenobarbital, ½ grain (33 mg.) four times daily, produced improvement for a while. Periods of emotional stress and strain aggravate the condition decidedly. He has no significant history of allergy. Please suggest probable causes and treatment.

M.D., Ohio.

Answer.—The etiologic aspects of recurrent herpetiform lesions are complicated. The primary cause is the virus of herpes simplex, but numerous factors may be present to increase the susceptibility of the subject or tissues to such an infection. Among the contributing factors may be allergy, vitamin B deficiency, mild local trauma, emotional instability and intoxication.

In the present instance the history of psychic trauma is suggestive. The chronicity suggests a constitutional element. The recurrent loss of immunity to the virus is characteristic and is a reason for recurrences. Persons may also have a specific susceptibility, with a low antibody titer to the herpes simplex virus. One can only speculate on the method by which an emotional problem can produce an oral lesion. It has been reported that the lysozyme content of various secretions rises in some persons during mental stress and that these persons are then susceptible to upper and lower intestinal ulceration. The lysozyme is mucolytic and reduces the protection of the mucosa.

This patient might be helped by a neuropsychiatrist. A barbiturate-hyoscine-belladonna mixture might be administered before meals, three times daily. Estrogenic ointment (400 rat units per gram) could be applied to the mucosa at the rate of 1 Gm. per week. An antihistaminic drug could be given a trial. The best method in many hands has been repeated vaccination, every week or ten days, with smallpox vaccine; a series of eight or ten vaccinations is given, even if no "take" occurs, starting during a period of freedom from ulceration. An oral flareup may occur following vaccination, but the ultimate results are usually good.

DOUCHES AFTER INTERCOURSE

To the Editor:—A patient using the jelly and diaphragm method of contraception explains that she has been instructed to leave the diaphragm in place for five hours after intercourse without any douching. What is the right advice to be given?

H. Spitzer, M.D., Clarinda, Iowa.

Answer.—The basis for asking women to wait several hours after intercourse before taking a douche is the belief that it requires this amount of time for the spermicidal jelly to destroy the fertilizing ability of sperm. If a douche is taken immediately or shortly after coitus, it is possible for some sperm to escape the action of both the jelly and the douche and pregnancy may result. It is safest to ask the patient to overcome the desire to take a douche immediately after intercourse. Perhaps washing the external genitalia with soap and water may suffice to combat the patient's desire to clean herself internally.

HYPERTENSION AND EXTRASYSTOLES

To the Editor:—Pleaes give me the present concensus regarding phlebotomy in hypertension. About six weeks ago I noted that my pulse rate was too rapid (100 to 110) and that there were frequent pauses (extrasystoles I was told). I am 64 and have had arteriosclerosis for years; my blood pressure is 150 to 170 systolic and 100 to 104 diastolic. I have smoked 11 cigaretes with zeus® filter (changed two to three times daily) for years and have drunk about 7 cups of coffee daily. Beliieving the tachycardia may have resulted from coffee, I tapered off rather rapidly, stopping completely after one week and drinking postum. At this time I had a mole removed from my face with procaine hydrochloride anesthesia, and a week later a bicuspid tooth was extracted with the same type of anesthesia. The next day I had a spontaneous epistaxis. Blood poured out of my left nostril and posteriorly into my mouth. I managed to give myself ¼ grain morphine sulfate (about 15 mg.) and called a doctor. An anterior pack was placed at home and a posterior pack at the hospital. After this rather large loss of blood, my blood pressure was 140 systolic and 94 diastolic, and my blood cell count has remained normal. There have been no extrasystoles since the hemorrhage, and my pulse rate remains around 80. I began drinking coffee again soon after the hemorrhage. Not one internist who examined me prior to hemorrhage had any suggestion to make, other than "go on with your activities as usual." I would like to know what effect the removal of about 500 cc. of blood would have if repeated at such times as my pulse rate again becomes rapid and extrasystoles reappear. I am 6 feet (183 cm.) in height and weigh 142 pounds (64 Kg.).

M.D., California.

ANSWER.—Modern concepts of hypertensive arterial disease do not include phlebotomy as a therapeutic measure, with the rare exception of those cases in which hypertension is secondary to polycythemia. More commonly hypertension is associated with anemia, and correction of the anemia without other therapy often leads to a reduction of the arterial tension to more nearly normal levels. In the present instance there is no information as to the blood cell count, hemoglobin concentration and the like prior to the hemorrhage. If the blood cell count was "normal" after such extensive loss as is implied, it is possible that this does represent one of those rare instances of polycythemic hypertension. The data presented do not permit of a more precise opinion. There are other possible explanations for the immediate, but not necessarily lasting, improvement; the rest demanded by the hemorrhage or the removal of a focus of infection (it was not stated whether there was a root abscess involved in the dental extraction) are possible factors. The origin and significance of premature systoles are likewise variable, and their temporary disappearance is not necessarily due to the diminished arterial tension.

Arterial hypertension is due to arteriolar constriction or hypertonia with only two exceptions: polycythemia and coarctation of the aorta. In the latter instances the hypertension is limited to the upper extremities, and the pressure in the legs is found to be lower than in the arms. Both these etiologic types are rare. The usual arteriolar spasticity may follow many different causative factors which are not necessarily identical or even similar in different cases of hypertensive disease. Therapeutic effectiveness is predicated largely on discovery and correction of the causative factors in the specific case. A truly thorough diagnostic study to determine the probable cause of this particular instance of hypertension is indicated.

LUMP IN UPPER PART OF THE ABDOMEN

To the Editor:—What is the shortest time for the development of a desmoid tumor after trauma? A patient was thrown against a steering wheel in a car collision, and about two weeks later he noticed a lump in the upper quadrant of his abdomen (region of the right upper rectus muscle).

Albert Cohn, M.D., Vallejo, Calif.

ANSWER.—A period of two weeks is extremely brief for the development of a desmoid tumor. Most reported cases have occurred in women during the childbearing period of their lives, and pregnancy has been considered a factor. During nineteen years at the Mayo Clinic, 50 cases of desmoid tumors were recorded. The tumors are slow growing and not classed as malignant. Usually the tumor develops in the rectus muscle below the level of the umbilicus. It has been reported as occurring as late as nine months after delivery. Possibly the "lump in the upper quadrant of the abdomen" in this patient is a hematoma.

OLD DRIED PLASMA

To the Editor:—Is there any practical use for dried plasma which has passed its expiration date?

C. T. Speck Jr., M.D., Cleveland, Tenn.

ANSWER.—Experimental work carried out on dried plasma shows that under ordinary conditions of preservation, away from the light, it will keep, practically unchanged, all its essential qualities for at least eight years.

BLOOD PRESSURE IN THE GIRAFFE

To the Editor:—In view of the long passage necessary and the resulting increase of hydrostatic pressure of the blood traveling from the heart to the brain of the giraffe, what would the blood pressure be and how would adequate cerebral blood flow be maintained? If no actual measurements have been carried out, would you give a speculative answer from other available data?

M.D., New Jersey.

ANSWER.—Blood pressure data on the giraffe are not available. It is known that the postural pressure-regulating mechanism, which is located in the carotid sinus in most mammals, is at the base of the skull in all cud-chewing animals, whose heads are constantly being raised from the ground to levels above the heart. In the giraffe the head goes from the ground to a height of 17 feet (520 cm.) when it stops drinking water and begins to browse on the trees. It seems likely that the diastolic pressure rises 100 mm. of mercury or more with that change in posture. The venous pressure in the brain must be nearly 150 mm. of mercury when the giraffe is drinking, and arterial pressure must be maintained at about the same level during drinking as when the head is at the level of the heart—presumably a diastolic level of at least 50 to 70 mm. of mercury and must be 150 mm. or more to maintain pressure in the regulating center when the animal is browsing on high branches.

CALCIUM GLUCONATE

To the Editor:—What would be the risk and the required precautions in making daily intravenous injections of 10 cc. calcium gluconate for a period of four months?

H. Spitzer, M.D., Clarinda, Iowa.

ANSWER.—The inquirer does not indicate the concentration of the solution of calcium gluconate injected intravenously. This, however, is usually 10 per cent, and 10 cc. of such a preparation injected daily would provide a daily dosage of about 0.09 Gm. of calcium. This amount is not excessive if the solution is injected slowly. The effects of repeatedly injected calcium salts are immediate and only temporary unless one dose is above average and sufficient to prolong elevation of plasma calcium and produce cumulative overdosage. Concentrations of calcium gluconate higher than 10 per cent have been employed intravenously, but are not usually recommended—too rapid intravenous injection of calcium may affect the heart and central nervous system. Calcium should not be injected into digitalized patients. Calcium gluconate is relatively nonirritant, but it may lead to abscess formation when administered intramuscularly in infants and children.

RETINITIS PIGMENTOSA

To the Editor:—Please recommend a place where a patient with retinitis pigmentosa could be successfully treated. The patient is a boy of 20 whose elder brother has been totally blind for two years. Other members of the family have normal eyesight. This patient cannot see any object directly but has to look up, down or sideways. Can anything be done for his eyes?

J. M. Jussawalla, M.D., Bombay, India.

ANSWER.—Retinitis pigmentosa is a progressive primary degeneration of the retina which cannot be predictively healed by any form of treatment that has yet been tried. Treatment by vasodilatation, whether induced by drugs or by section of the sympathetic nerves, has not been demonstrated as effective. Reports of improvement in quality as well as quantity of vision by means of injections of hormones are not sufficiently encouraging to warrant a widespread adoption of this method of treatment. Eyes undergoing retinal degeneration should be protected from excessive light and prolonged use. Vision that has been lost by retinal degeneration cannot be restored by any form of treatment.

DIABETIC RETINOPATHY

To the Editor:—What is the most recent therapy for diabetic retinopathy. Are there any hormones of value for this disease?

M.D., Louisiana.

ANSWER.—The cause of the retinopathy in diabetes is not known. The duration of the disease seems to be more important than any other factor; 92 per cent of all patients who have diabetes more than fifteen years have vascular degeneration with retinopathy. Effective treatment is essentially prophylactic and must take place early in the disease. Rigid control with diet and insulin is indicated, although at best the process may be only delayed. When the retinopathy is developed, a high protein diet and ascorbic acid may be of value. Rutin therapy may prevent progression without causing any improvement. In an occasional patient with vascular occlusions, anticoagulant therapy may be indicated.

The Journal of the
American Medical Association

Published Under the Auspices of the Board of Trustees

Vol. 141, No. 5 Chicago, Illinois October 1, 1949

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EFFECTS OF CORTISONE ACETATE ON RHEUMATOID ARTHRITIS

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A crystalline steroid was isolated from the adrenal cortex by Kendall and co-workers in 1935.[1] Its chemical formula, 17-hydroxy-11-dehydrocorticosterone, was determined by them in 1938.[2] Prior to 1948 so little of the hormone, known as Kendall's compound E, was available for research that only a few facts regarding its physiologic activity were established. Its use in rats subjected to adrenalectomy improved muscle activity, as measured by the muscle-work test [3] and increased physiologic resistance to stress, cold and certain toxic substances.[4] In young rats growth was retarded and weight loss was induced.[5] A definite influence on carbohydrate metabolism was established: administration to partially depancreatized rats intensified the diabetic state [6]; administration to normal rats produced transient hyperglycemia and glycosuria.[7] In 3 human subjects with coexisting Addison's disease and diabetes mellitus, the diabetes was augmented when compound E was given in daily doses of 8 to 20 mg.[8]

It was not until 1946, after more than two years of intensive research had been completed in cooperation with Kendall and his staff at the Mayo Clinic, that compound E, now known as cortisone, was finally synthesized by Sarett in the Merck research laboratories from a bile acid (desoxycholic acid). Continued cooperation between Kendall and Merck scientists resulted in improvements in the synthesis, but not until late in 1948 had sufficient material accumulated to provide the small amounts of compound E necessary for preliminary clinical evaluations. More recently compound E has been made and used in the form of the acetate (cortisone acetate). The product is still extremely scarce, but its physiologic activities are now being investigated at several research centers.

Application of the Drug to Rheumatoid Arthritis.—The clinical course of rheumatoid arthritis is not always one of relentless progression. The disease is capable of spontaneous reversibility, and not infrequently the course is interrupted by periods of partial or complete remission; complete remissions may last for months or years, and spontaneous permanent inactivations are not rare. Moreover, certain procedures, such as injections of typhoid vaccine, starvation or a surgical operation, may sometimes induce temporary amelioration. Two conditions, pregnancy [9] and jaundice from biliary obstruction or hepatitis,[10] are potent antagonists of rheumatoid arthritis. Neither state is known to influence favorably the course of proved bacterial infection, yet the intercurrence of pregnancy or jaundice in patients with rheumatoid arthritis produces temporary remission, partial or complete, in a high percentage of instances. Because these facts do not harmonize with the unproved bacterial theory of the causation of rheumatoid arthritis, Hench [11] speculated that some biochemical disturbance might be at fault in the pathogenesis. He conjectured that a bisexual hormone, possibly an adrenocortical hormone, might be involved in the curious antirheumatic effect of pregnancy, jaundice and other states. In September 1948 Hench, Kendall, Slocumb and Polley [11b] administered compound E to a patient with severe rheumatoid arthritis; rapid and striking improvement in the clinical manifestations of the disease resulted.

Observations of Hench, Kendall, Slocumb and Polley.—These investigators recently reported the effects of compound E or its acetate on 14 patients with severe, or moderately severe, rheumatoid arthritis. The duration of the disease was from four and one-half months to five years, and the erythrocyte sedimentation rates ranged from 108 to 62 mm. in one hour (Westergren method). Prompt and striking improvement in the musculoskeletal, constitutional and laboratory manifestations of the disease resulted in each case. Within a

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11. (*a*) Hench, P. S.: The Potential Reversibility of Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **24**:167-178 (March 30) 1949. (*b*) Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis: Preliminary Report, ibid. **24**: 181-197 (April 13) 1949.

few days there was decided lessening of the muscular and articular stiffness, with less articular aching, tenderness and pain on motion, and significant improvement in function of muscles and joints. The favorable effects often began within a few hours after the first injection of cortisone and were pronounced within a few days. Articular swellings usually diminished, fairly rapidly and completely in some cases but tardily and incompletely in others. Constitutional symptoms subsided rapidly, often with increase in appetite, corresponding gain in weight and strength, loss of "toxic" feeling and the development of a strong sense of well-being.

In 9 of the 14 patients compound E or its acetate was given for short periods ranging from eight to sixty-one days. In 8 of these 9 patients the symptoms and signs began to return within two to four days after the discontinuance of endocrine therapy; the return progressed slowly in 6 but rapidly in 2. One patient retained most of the improvement five months after cessation of treatment with the preparation.[12] Five of the 14 patients received the compound either continuously or intermittently for prolonged periods of two to four months. During administration of the drug they were almost, but not entirely, free of symptoms, but during periods when its administration was interrupted exacerbations of the disease promptly ensued. Prolonged administration of cortisone in 1 patient produced signs of an endocrine disturbance characterized by mild acne and hirsutism, rounding of the facial contour, amenorrhea and mental depression; these were reversible features which disappeared when the administration of cortisone was discontinued.[12]

In each of the 14 cases the erythrocyte sedimentation rate diminished notably, the fall in rate beginning usually within three to nine days after the first administration of compound E. Except in 3 cases, the rates returned to normal within ten to thirty-five days. Other corrective influences in initially abnormal laboratory determinations were noted also: increased serum globulin levels and lowered albumin-globulin ratios, when present, tended to become normal within a few days; urinary excretions of 17-ketosteroids were reduced and excretions of corticosteroids were increased; erythrocyte counts and hemoglobin values improved; the synovial membranes, examined in 1 case before and after the use of cortisone, showed histologic evidence of healing.

Our Investigation.—The effects of administration of cortisone were observed by us in 8 patients with rheumatoid arthritis.[13] The patients were studied in two groups: (*a*) 5 patients with severe and decidedly active disease, and (*b*) 3 patients with less severe rheumatoid arthritis (2 with moderate and 1 with mild disease). For the sake of simplicity of presentation, the two groups will be discussed separately.

EFFECTS OF CORTISONE IN SEVERE RHEUMATOID ARTHRITIS

Each of the 5 patients with severe rheumatoid arthritis had involvement of multiple peripheral joints and great disability; 2 had involvement of the spine also. The duration of the disease varied from four to fifteen years. Erythrocyte sedimentation rates before the use of cortisone were (in order of cases): 74, 128, 70, 97 and 80 mm. in one hour (Westergren method).

Cortisone acetate was administered to each patient for eight days. In regard to the daily dose we were guided by the experience of Hench, Kendall, Slocumb and Polley. Four of the 5 patients received an initial dose of 300 mg. given intramuscularly on the first day and 100 mg. daily thereafter for seven days. One patient (case 3) received 200 mg. on the first and second days and 100 mg. daily thereafter for six days; this patient had coexisting diabetes mellitus, and it was considered inadvisable to risk an initial dose of 300 mg.

Controls.—To provide adequate controls, daily intramuscular injections of a control substance consisting of a fine suspension of cholesterol, identical in appearance to the suspension of cortisone, were given for two days prior to and five days after actual administration of cortisone. Improvement started after the administration of cortisone and regression set in after withdrawal of the agent; the control substances, given without the patients' knowledge, did not influence the course of disease. Analgesics and other medicaments were withheld during the periods when cortisone and the control substance were given.

REPORT OF CASES

CASE 1.—*History and Course Prior to Administration of Cortisone.*—M. L., a man aged 53, had severe rheumatoid arthritis of ten years' duration involving multiple peripheral joints. The first musculoskeletal symptoms dated to 1939, and for the first three years the articular manifestations were episodic in type. From 1942 to 1947 the disease was chronic and progressive, with extension to involve an increasing number of joints. In the fall of 1947 gold salt therapy was begun, and by March 1948 the disease was in almost complete clinical remission. Because of gold dermatitis, chrysotherapy was discontinued in October 1948. In December 1948 severe exacerbation of the arthritis occurred, and during the next six months the disability of the patient became progressively greater. He lost more than 20 pounds (9.1 Kg.) in body weight, experienced pronounced fatigue and became emotionally unstable and mentally depressed. Finally pain and disability were so severe that he resorted to frequent doses of codeine (as much as 3 or 4 grains [0.19 or 0.26 Gm.] in a day) in addition to large daily amounts of salicylates.

His functional capacity was greatly restricted. Because of disability in the fingers, wrists, elbows and shoulders he was unable to shave or comb his hair in the morning; these acts were postponed until about 2 o'clock in the afternoon, by which time he had limbered up somewhat. To dress himself in the morning was an exhausting and painful procedure, and at times it took him fifteen to twenty minutes to lace his shoes. He was able to get out of a chair by himself, but only with great effort; sometimes this took as long as ten minutes. He had much difficulty in feeding himself, especially in the morning, and it was hard for him to wring out a wash cloth, even partially.

Examination of the peripheral joints prior to the administration of cortisone revealed moderate to severe tenderness, swelling, limitation of motion and pain on forced motion of the proximal interphalangeal and metacarpophalangeal joints of both hands, both wrists and both elbows. Interosseous atrophy of the muscles of the hands was moderate in degree. The metatarsophalangeal joints of both feet were decidedly swollen and tender. The right ankle was severely swollen, tender and painful on motion; similar but less pronounced conditions were present in the left ankle. The right hip and both shoulders were moderately restricted on motion and painful on attempted forced motion. There was a rheumatoid nodule measuring 1.5 by 1.5 cm. on the dorsum of the right tarsal region, and bilateral olecranon bursitis was present. The erythrocyte sedimentation rate was 74 mm. in one hour.

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[12] Hench, P. S.: Personal communication to the authors.

[13] One of us (Dr. Boland) was among the five physicians invited to the Mayo Clinic in March 1949 to observe the effects of cortisone. Thereafter a small quantity of the preparation was made available to us by Merck & Co., Inc., Dr. James Carlisle, medical director.

Course with Administration of Cortisone.—After we began to give cortisone improvement was rapid: within ten hours, rest pain and stiffness were greatly reduced. Whereas the patient had previously given himself frequent injections of codeine, he found no need even for acetylsalicylic acid. By the next morning he had acquired a sense of well-being and strength; his appetite for breakfast was excellent, and for the first time in several months even the "cool and almost hard-boiled egg tasted fine." He was able to wash, shave, comb his hair and dress himself by 7 o'clock. Within forty-eight hours there was a significant reduction in joint swelling and an increase in motion; joint tenderness was decreased 75 per cent. By the fourth day rest pain had disappeared entirely; only 10 per cent of the original stiffness remained, and there was only slight swelling in a few joints. Swelling of the olecranon bursae disappeared almost entirely, and the rheumatoid nodule diminished to one-half its original size. Euphoria was appreciable, and a psychiatric consultant judged the patient as "almost hypomanic"; he made intelligent and purposeful business deals by telephone, talked rapidly with gesticulations, voluntarily exhibited his calisthenic prowess to visitors and generally "felt great." Improvement was sustained throughout the period of cortisone administration; the over-all clinical improvement was estimated at 85 per cent. The erythrocyte sedimentation rate decreased to 49 mm. in 1 hour.

Course Following Withdrawal of Cortisone.—An acute flare-up of pain and swelling of the first and second metacarpophalangeal joints of the right hand developed thirty-six hours after the last injection of cortisone. In forty-eight hours limitation of motion, pain, stiffness, tenderness and swelling began to recur in all the involved joints. By the seventh day the patient was again mentally depressed; objectively, the joints were as bad as, or worse than, they had been before the administration of cortisone. During the succeeding month he lost 10 pounds (4.5 Kg.) in body weight and became despondent; the sedimentation rate rose to 77 mm. in one hour, and disability progressed. He was "more crippled than at any time during the past twenty years."

CASE 2.—*History and Course Prior to Administration of Cortisone.*—J. S., a woman aged 56, was extremely disabled from rheumatoid arthritis of four years' duration. For the first three years the disease was mild and articular involvement was confined to the metatarsophalangeal joints. In the spring of 1948 the process became more active and began to spread gradually to other joints. In December 1948, five months prior to the administration of cortisone, the disease became severe; within a few weeks practically all the peripheral joints, except the terminal interphalangeal joints of the fingers and toes, were involved. During this five month period she lost 35 pounds (15.9 Kg.) in weight, had a daily fever (100.6 to 102 F.), demonstrated pronounced anorexia, fatigue and weakness, and became greatly discouraged and mentally depressed. Joint pain was pronounced, and she reacted to attempted movement of her joints with fear, resistance and resentment. In addition to large doses of salicylates, she required several injections of codeine each day to control pain.

Examination of the joints revealed bilateral involvement of the shoulders, elbows, wrists, ankles, knees, metacarpophalangeal and metatarsophalangeal joints, sternoclavicular joints and the proximal interphalangeal joints of both hands and feet. These articulations were moderately to severely swollen, painful, tender and limited on motion. The temporomandibular joints were moderately tender, restricted in motion and painful. The erythrocyte sedimentation rate was 128 mm. in one hour (Westergren method), and the erythrocyte count was 3,040,000 cells per cubic millimeter, with 7 Gm. of hemoglobin.

Prior to the administration of cortisone disability was extreme and the patient was confined to bed. Without assistance from an attendant she was unable to sit up in bed, turn on her side, get on and off a bed pan or move her feet over the side of the bed. Because of painful and limited motion of the joints of the arms she was unable to feed herself, comb her hair, brush her teeth, bathe or dry herself, wring out a wash cloth or write. With considerable aid from an attendant she could walk with a painful, cautious, shuffling gait to the bathroom; however, she had to be lifted on and off the toilet seat.

Course with Administration of Cortisone.—Striking mental and physical improvement occurred within twenty-four hours after the patient received the initial injection of 300 mg. of cortisone. Her mental attitude changed and she became alert, cheerful and hopeful. Joint pain and stiffness were greatly lessened, and analgesics were no longer needed. Movement increased remarkably, and she was able to get on and off the bed pan, to aid herself in eating, and to walk to the bathroom without help and with little discomfort. Subjective and objective improvement continued at a rapid pace during the eight days of administration of cortisone. Each day there was further lessening of pain, tenderness and swelling, and movement of the joints increased greatly. On the fifth day she could get in and out of bed unassisted, put on her own slippers and robe, sit down and rise from chairs with ease, turn doorknobs, comb her hair, feed herself and accomplish numerous other acts which formerly were impossible. Despite advanced quadriceps atrophy, the strength in her legs returned quickly and she was able to walk through the hospital halls with security and confidence. At the end of eight days she estimated that approximately 90 per cent of her stiffness and pain had disappeared, and joint swellings were reduced notably. The erythrocyte sedimentation rate was reduced from 128 to 53 mm. in one hour, and the erythrocyte count increased 930,000 cells per cubic millimeter. Her temperature had remained normal since the second day of administration of cortisone. Her appetite was ravenous, and she sustained a total weight gain of 8¼ pounds (4 Kg.), an average of 1 pound (0.5 Kg.) a day.

Course After Withdrawal of Cortisone.—Improvement was maintained for approximately forty-eight hours after the use of cortisone was discontinued; then a recrudescence of symptoms ensued. For the next five days increased pain, tenderness, stiffness and swelling of the joints occurred, much of the gain in functional capacity was lost and daily fever (99.2 to 101 F.) returned. However, the manifestations then began to subside again, and improvement thereafter was progressive. Whereas originally she was completely bedridden and febrile, with the erythrocyte sedimentation rate 128 mm. in one hour, two months after cessation of administration of cortisone she was ambulatory and afebrile, with the erythrocyte sedimentation rate 44 mm. in one hour; approximately 75 per cent of the maximal improvement was regained.

CASE 3.—*History and Course Prior to Cortisone Therapy.*—L. D., a man aged 71, had severe rheumatoid arthritis involving multiple peripheral joints and the entire spine. In 1944, while he was under great emotional stress, the disease began acutely; within four weeks the wrists, elbows, shoulders, ankles, knees and small joints of the hands and feet were involved. Disability in these joints persisted; pain, aching, stiffness and limitation of motion of the spine intervened, with gradual spread to higher levels. Various types of therapy were tried, but response was indifferent to each; treatment with gold salts was given for one year in 1947 without noteworthy effect.

Examination of the musculoskeletal system prior to the administration of cortisone revealed moderate to severe swelling, tenderness and limitation of motion in the shoulders, elbows, wrists, ankles, knees, metacarpophalangeal and metatarsophalangeal joints bilaterally and the proximal interphalangeal articulations of both hands. There was pronounced flexion deformity with ulnar deviation of the fingers of the right hand. Both temporomandibular joints were tender, and motion of the jaw was slightly restricted. There was decided atrophy of various muscle groups, particularly the quadriceps and interosseous muscles. Typical poker-back deformity, with almost complete immobility of the lumbar and dorsal segments and with moderate restriction of cervical motion, was present; the chest expansion equaled 1½ inches (4 cm.). Roentgenographic changes characteristic of rheumatoid spondylitis were present. The erythrocyte sedimentation rate was 70 mm. in one hour.

The patient had had uncomplicated diabetes mellitus for ten years. For several months prior to administration of cortisone the diabetes was controlled adequately by a measured diet and 10 units of protamine zinc insulin daily.

Course with Administration of Cortisone.—Two hundred mg. of cortisone were given for two days and then 100 mg. were given daily for six subsequent days. Improvement was slow and only moderate in degree. Forty-eight hours after the initial injection, rest pain and stiffness began to recede and general strength improved. Mental depression, which was pronounced beforehand, disappeared. The patient became jovial and witty, but true euphoria did not develop. Joint movement and functional capacity improved moderately within the eight days, but not to the degree noted in the other 4 cases. His appetite was good but not ravenous. Joint tenderness decreased moderately, but appreciable reduction in joint swellings did not occur. Aching and stiffness of the neck and upper part of the back diminished, but the objective observations referable to the spine did not change significantly. The erythrocyte sedimentation rate diminished from 70 to 34 mm. in one hour at the end of the eight day period.

Although the patient was on a measured diabetic diet, glycosuria was noted twenty-four hours after the initial injection of 200 mg. of cortisone. Thereafter 30 to 50 units of insulin were required daily to control the diabetes. Three days after withdrawal of the endocrine substance the insulin requirement of the patient reverted to 10 units daily.

Course After Withdrawal of Cortisone.—Retrogression after the withdrawal of cortisone was slow, and although improvement had not been extensive, the gains which had been made were retained for almost two weeks. At the end of one month the symptoms and observations had increased to their original intensities and the sedimentation rate had returned to 60 mm. in one hour.

CASE 4.—*History and Course Prior to Administration of Cortisone.*—A. H., a man aged 52, had suffered from rheumatoid arthritis for fifteen years. From 1947 to 1948 the clinical course had been punctuated with partial remissions and exacerbations. For more than one year, however, he had been almost totally incapacitated because of severe involvement of multiple peripheral joints and the entire spine. For eight weeks prior to the administration of cortisone he had been unable to dress himself and was bedfast except for bathroom privileges. He was unable to put on his socks or button his pajamas and was barely able to feed himself. Late in the afternoon he managed to shave with an electric razor, but it was impossible for him to comb the back of his hair and both hands were needed to brush his teeth. He took at least fifteen minutes to get out of bed in the morning, and even late in the day he needed assistance in getting on and off a toilet seat. He walked with a painful shuffling gait, and after going approximately 30 feet (9 meters), it was necessary for him to rest before proceeding farther. Constitutional reaction was pronounced, with anorexia, weight loss of 20 pounds (9.1 Kg.) in the preceding year, weakness and easy fatigability.

Examination of the musculoskeletal system before the administration of cortisone revealed severe swelling and moderate tenderness, pain and limitation of motion of the elbows, wrists, knees, ankles, metacarpophalangeal and metatarsophalangeal joints bilaterally and the proximal interphalangeal joints of the fingers. Motion was restricted decidedly in both shoulders and moderately in both hips. The temporomandibular joints were tender, painful on motion and moderately restricted. The right sternoclavicular joint was swollen and tender. Advanced muscle atrophy, particularly of the interosseous, shoulder girdle and quadriceps group of muscles, was present. Examination of the spine revealed typical signs of rheumatoid spondylitis with pronounced restriction of motion of the lumbar, dorsal and cervical segments and limitation of chest expansion to 1 inch (2.5 cm.). Roentgenograms of the spine revealed partial ankylosis of both sacroiliac joints and moderate paraspinal ligamentous calcification in the lower dorsal and upper lumbar regions. The erythrocyte sedimentation rate was 97 mm. in one hour, and the erythrocyte count was 4,040,000 cells per cubic millimeter with 10 Gm. of hemoglobin.

Course with Administration of Cortisone.—Improvement was gradual and progressive. After thirty-six hours, rest pain disappeared almost entirely, and stiffness and mental depression began to subside. After three days joint pain on weight-bearing and motion decreased, and articular function and muscle strength were decidedly improved; he walked a distance of 300 feet (90 meters) and with a longer stride and more rapid pace. By the fourth day 75 per cent of the stiffness had disappeared and the range of motion in the fingers, wrists and elbows was greater. For the first time in several weeks he was able to comb the back of his hair, make a fairly tight fist, scratch his ears, put his socks on and button his pajamas. On the fifth day he awakened with an urge to exercise and accordingly walked up and down the corridor a number of times, visiting various patients en route. He could sit down on, and arise from, chairs with ease and could slowly and cautiously climb a flight of stairs. He had a new zest for living and began to make plans for the future. Appetite was augmented and extra food was requested between meals; a weight gain of 12½ pounds (5.7 Kg.) was recorded during the eight day period of cortisone administration. Back and neck discomfort disappeared almost entirely, cervical motion was notably increased and chest expansion increased ½ inch (1.27 cm.). Reductions in joint swellings were definite but not pronounced; in general, articular swellings were reduced about 30 per cent. At the end of eight days the sedimentation rate had fallen from 97 to 56 mm. in one hour.

Course Following Withdrawal of Cortisone.—A gradual return of aching and stiffness began forty-eight hours after cessation of administration of cortisone, and thereafter analgesics were requested. Joint tenderness, swelling and restriction of motion, together with muscle weakness, returned slowly over a period of four weeks. At the end of this period most of the gain in functional capacity had been lost. Two months after withdrawal of the drug the articular manifestations were almost identical to those noted prior to the administration of cortisone, although the patient believed that his energy and mental outlook remained improved.

CASE 5.—*History and Course Prior to Administration of Cortisone.*—M. S., a woman aged 49, had severe peripheral rheumatoid arthritis of eleven years' duration. The disease began insidiously in 1936 and, except for some improvement following gold salt therapy in 1942 and 1943, progression had been steady. For six months prior to the administration of cortisone disability was extreme; pain, weakness and fatigability were intense and joint function had decreased rapidly. The patient could walk for short distances but did so in a stooped position and with an awkward gait, dragging her feet and clutching various objects for support as she went along; agonizing pain accompanied each step. To arise from a sitting position was a laborious feat which she accomplished by rocking from one side to the other. On attempting to sit on a chair or toilet seat she fell heavily and then cried out with pain. With great effort she could slowly get out of bed, moving her legs over the side with her hands and arms. She was unable to lift the bed covers with her hands and maneuvered them with her forearms. Disability of fingers prevented her from turning a radio dial, cutting meat or buttoning clothes; toothpaste was squeezed from the tube by pressure with the forearm. It was impossible for her to brush her hair or teeth or to wash herself until late afternoon. Despite great incapacity and appreciable activity of the disease, she was only mildly depressed mentally, had a fairly good appetite and had not lost weight.

Examination of the musculoskeletal system revealed moderate to severe swelling, tenderness and limitation of motion of the wrists, elbows, shoulders, ankles, knees, metacarpophalangeal and metatarsophalangeal joints bilaterally and the proximal interphalangeal joints of the fingers. The left temporomandibular joint was tender and painful on forced motion, and the left sternoclavicular joint was moderately swollen. Flexion deformity was present in both knees, 15 degrees on the left and 20 degrees on the right. There was decided atrophy of the shoulder girdle and quadriceps muscles and moderate atrophy of the interosseous muscles of the hands. The erythrocyte sedimentation rate was 80 mm. in one hour and the erythrocyte count was 4,140,000 cells per cubic millimeter with 11 Gm. of hemoglobin.

Course with Administration of Cortisone.—Improvement with the use of cortisone was rapid and dramatic. Six hours after the patient received the initial injection of 300 mg. of cortisone, a visitor with whom she was playing cards remarked how much better she was holding and handling the cards. With surprise she found that her fingers moved freely and relatively painlessly, that she could turn the radio dial and pull the bed covers up with her hands. That evening she swung her legs over the side of the bed, *put on her slippers without aid, stood almost straight* and gingerly walked about the room with only slight discomfort in the knees. She was able to turn doorknobs with her hands and arise from a chair with little difficulty. She could easily accomplish many acts which were exceedingly difficult a few hours previously. Progress continued, and twenty-four hours after the initial injection of the drug she estimated that 75 per cent of rest pain and stiffness were gone. She was able to brush her hair, wash the back of her neck, squeeze the toothpaste tube with her fingers, pick up fine objects from the floor and dress herself. Euphoria was pronounced, and she chatted almost incessantly about her achievements, gesticulating freely as she talked. Weakness and fatigue lessened remarkably and mild insomnia developed. Swelling, tenderness and range of motion in the joints improved notably by the fourth day; tenderness and swelling of the joints were reduced approximately 50 per cent (figs. 1 and 2). Flexion deformities of the knees decreased from 15 to 5 degrees on the left, and from 20 to 10 degrees on the right. Improvement continued throughout the course of administration, with daily gains in functional accomplishments. Appetite was improved, and a weight gain averaging ¼ pound (0.11 Kg.) a day was recorded. The erythrocyte sedimentation rate decreased from 80 to 59 mm. in one hour (Westergren method), and the erythrocyte count increased 500,000 cells per cubic millimeter during the eight day period.

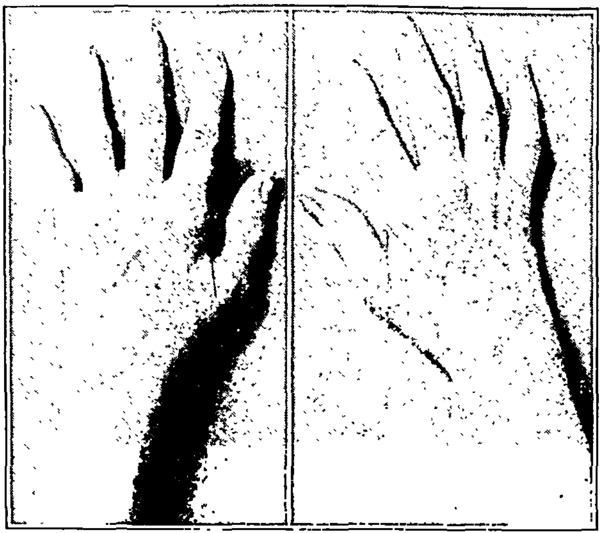

Fig. 1. (case 5).—Appearance of patient's hands before the administration of cortisone; note swellings of the wrists, metacarpophalangeal and proximal interphalangeal joints.

Course Following Withdrawal of Cortisone.—Improvement was maintained until two days after the withdrawal of cortisone, when pain, stiffness, tenderness and limitation of motion began to return. Regression was gradual over a period of approximately one month, at the end of which time the objective and subjective manifestations had returned almost to their original states and the erythrocyte sedimentation rate had increased to 77 mm. in one hour.

SUMMARY OF CLINICAL EFFECTS OF CORTISONE IN SEVERE RHEUMATOID ARTHRITIS

The immediate result from short term administration of large doses of cortisone in the 5 cases of severe rheumatoid arthritis was decidedly pronounced improvement in 3, pronounced improvement in 1 and moderate improvement in 1 (table).

Effects on the Musculoskeletal System.—The musculoskeletal symptoms began to subside rapidly with the administration of cortisone. In 3 cases the improvement was striking, beginning within six hours after the initial injection in 1 case and within twenty-four hours in 2. Improvement proceeded more slowly and less spectacularly in the remaining 2 cases. One patient, who had been barely able to get out of bed without assistance at 11 o'clock in the morning, when the first injection was given, was able to get in and out of bed with ease and to walk freely about the room in the evening of the same day. Another, who had been unable to bring her hands to her mouth or to handle eating implements, was able to feed herself twenty-four hours after the initial injection.

The first symptoms to subside were muscular and articular stiffness and rest pain. Within twenty-four to forty-eight hours the patients had no further desire for acetylsalicylic acid or other analgesics. Next in order of improvement were lessening of joint pain on motion, increased motion and decreased tenderness of the joints. Reductions in articular swellings were slower in appearing. Although swellings and effusions were reduced greatly in 3 cases, they did not recede entirely during the eight day period of administration of cortisone. A rapid return of muscle strength and joint function, despite advanced muscle atrophy and previously restricted joint motion, was remarkable. Four of the 5 patients had pronounced quadriceps atrophy; yet, after one week of cortisone administration they walked, got on and off chairs and climbed stairs with ease.

The over-all subjective and objective improvement was progressive and was greater with each successive day of cortisone administration, but apparent sudden increases in functional capacity often surprised both the patient and the observers. For example, because of pain on weight-bearing, patient 4 had restricted his walking to the distance between the bed and the toilet. On the fifth day of administration of cortisone he awakened with the urge to walk and proceeded to walk up and down the hospital corridors several times. Before receiving the drug, another patient (case 2) was so disabled that she could not get on or off the bed pan without aid from an attendant. Although her improvement had progressed rapidly, she remained cautious about undertaking new adventures—yet on the seventh day she literally danced a jig to the amazement of a group of observers. Although 3 of the 5 patients showed extremely remarkable improvement, they were by no

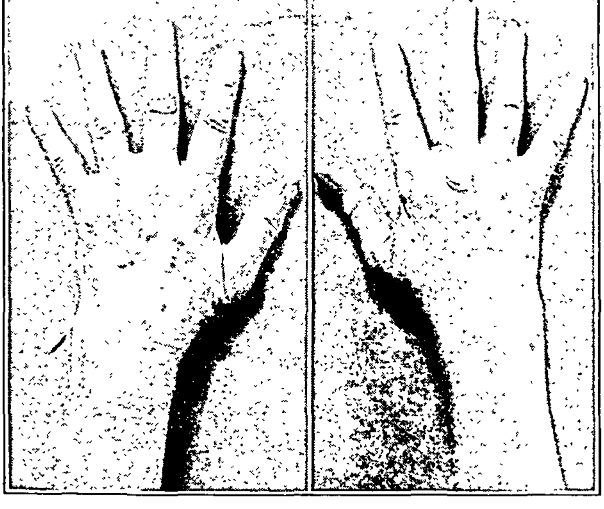

Fig. 2 (case 5).—Appearance of hands of the patient after eight days of administration of cortisone (total dose of 1 Gm.). Joint swelling decreased notably, particularly in the metacarpophalangeal and proximal interphalangeal joints.

means entirely free of subjective and objective musculoskeletal manifestations at any time during the short term study. Swelling and tenderness of joints, restrictions of motion and pain on forced motion, although greatly lessened, were still present. Rest pain completely disappeared in 3 patients, but some degree of stiffness of joints and muscles persisted in all, especially in the early morning.

Effects on Constitutional Symptoms.—A rapid change in mental attitude was one of the outstanding improvements noted. Each patient was mentally depressed to some degree before receiving cortisone, and 4 of 5 were pessimistic as to their futures. Within twenty-four to forty-eight hours after administration of cortisone was begun, each patient became cheerful and optimistic. In 3 patients frank euphoria developed, and a psychiatric consultant considered 1 patient "almost hypomanic." This mental stimulation was sufficient to produce mild insomnia in 4 cases, but, despite the lack of sleep, fatigue did not result. To us the mental stimulation appeared to be greater than would be expected on the basis of relief from pain alone. Decided increases in general strength and endurance were noted by all. One patient (case 2) who had a daily fever (100.6 to 102 F.) became afebrile on the second day of administration of cortisone and remained so until two days after administration of the drug was stopped. Within twenty-four to seventy-two hours definite increases in appetite occurred. The appetites became ravenous in 3 patients, and extra quantities of food had to be provided for them. Four of the 5 patients, showed significant gains in weight, varying from 2¼ to 12½ pounds (1 to 5.7 Kg.) during periods of eight days. The fifth patient was on a measured diabetic diet and gained only ½ pound (0.23 Kg.), but his relish for food improved considerably.

Course After Discontinuance of Cortisone.—After withdrawal of cortisone, the clinical manifestations returned to approximately their original severities in 4 of the 5 patients: rapidly in 1, and slowly in 3. In 1 patient (case 1) improvement began to wane within thirty-six hours, and there was an acute exacerbation followed with severe pain, swelling, redness and limitation of motion in several joints; within one week the articular observations and the mental depression were worse and the sedimentation rate was slightly higher than before cortisone was begun. In the other 3 patients increases in rest pain, stiffness, joint swelling and limitation of motion began within two to six days; gradually, over periods of three to six weeks, the overall disability had returned to the precortisone level. Erythrocyte sedimentation rates rose more slowly, but within two months they had returned close to their original values (table).

The fifth patient (case 2), whose disease was the severest and most active, has retained, two months after discontinuance of cortisone, approximately 75 per cent of her maximal improvement.

Toxic Reactions.—Toxic reactions were not noted from the short term administration of cortisone to patients in this series. However, much more experience is needed before definite statements can be made as to the safety of prolonged administration of the preparation, especially in large doses.

SUMMARY OF LABORATORY EFFECTS OF CORTISONE

Erythrocyte Sedimentation Rates.—Sedimentation rates decreased significantly in each of the 5 cases; decreases varied from 15 to 75 mm. within eight days (table). The degree of clinical improvement was not necessarily reflected by the reduction in sedimentation rate. In fact, 2 of the 3 patients (cases 1 and 5) who displayed the greatest clinical improvement had the smallest reductions in sedimentation rates.

Summary of Effects of Cortisone Acetate in Severe Rheumatoid Arthritis

		Clinical Effects with and Following Administration of Cortisone *						Erythrocyte Sedimentation Rates (Mm. in 1 Hour, Westergren Method)		
Case	Sex	Onset of Improvement (Hours After Initial Injection)	Rate of Improvement	Degree of Improvement at Height of Response (8th Day)	Onset of Relapse (Hours After Withdrawal)	Rate of Relapse	Degree of Improvement Maintained 2 Mo. After Withdrawal	Before Cortisone	Height of Improvement (8th Day)	2 Mo. After Cortisone Withdrawal
1	M	10	Rapid	Decidedly pronounced	36	Rapid	None (worse)	74	49	79
2	F	24	Rapid	Decidedly pronounced	See text	See text	75%	128	53	41
3	M	72	Relatively slow	Moderate	96	Slow	None	70	34	74
4	M	36	Fairly rapid	Pronounced	48	Relatively slow	None	97	56	78
5	F	6	Rapid	Decidedly pronounced	48	Relatively slow	None	80	59	77

* Administered in large doses for eight days.

Erythrocyte Count and Hemoglobin Determinations.—Hypochromic anemia, a factor in all 5 cases, was mild in 3, moderate in 1 and severe in 1. Despite daily removal of 30 cc. of blood for laboratory tests, the anemia was significantly improved during the eight day period of administration of cortisone in 3 cases. In these the increases in erythrocyte counts ranged from 390,000 to 930,000 cells per cubic millimeter, and the hemoglobin increases ranged from 0.9 to 2.4 Gm.

Electrocardiograms.—Electrocardiograms taken before and at the termination of administration of cortisone failed to show significant changes except for a slowing of the heart rate, which ranged from 14 to 21 beats per minute in 4 patients. In 1 patient who was febrile before and afebrile during administration of the drug, the decrease was 58 beats per minute. Hench and colleagues noticed a similar heart-slowing effect from cortisone in cases of rheumatic fever.[14]

Electroencephalograms.—Because of the notable mental stimulation which resulted in the first 3 cases, in 2 of which the patients exhibited frank euphoria, electroencephalographic studies were made before and after the administration of cortisone in cases 4 and 5. In both instances tracings made at the termination of the administration of cortisone revealed increases in frequency of the alpha waves, an increase of 8.8 per cent in 1 and 9.2 per cent in the other. These observations suggest that administration of the endocrine substance may cause a speeding up of cerebral activity.

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[14] Hench, P. S.; Slocumb, C. H.; Barnes, A. R.; Smith, H. L.; Polley, H. F., and Kendall, E. C.: The Effects of the Adrenocortical Hormone [illegible] (Compound E) on the Acute Pha[illegible] [illegible]nary Report, Proc. Staff Meet., Mayo C[illegible] 24: [illegible] 1949.

Dextrose Tolerance.—Intravenous dextrose tolerance tests were made in 2 nondiabetic patients before and at the termination of administration of cortisone. In 1 patient there was no significant change; in the other the tolerance was slightly reduced.

Patient 3 had coexisting diabetes mellitus, which was controlled by a measured diet and 10 units of protamine zinc insulin daily. Administration of cortisone resulted in a temporary intensification of the diabetes. On the second day the insulin requirement increased, and thereafter 30 to 50 units daily were needed to control the disease. Three days after administration of the endocrine preparation was discontinued, the insulin requirement dropped to the precortisone amount of 10 units. Experience in this case indicates that cortisone should be given with extreme caution to patients with diabetes mellitus. Fortunately, the association of rheumatoid arthritis and diabetes is uncommon.

In a separate report certain special laboratory and metabolic studies will be presented.

EFFECTS OF SMALLER DOSES OF CORTISONE ON MILD AND MODERATE RHEUMATOID ARTHRITIS

Although Hench, Kendall, Slocumb and Polley found that doses of 25 to 50 mg. of cortisone were inadequate in severe and moderately severe rheumatoid arthritis, it was logical for them and us to speculate that perhaps smaller doses of cortisone might be effective in controlling mild and relatively mild disease. If further investigation justifies the use of the preparation as a therapeutic agent, this appears as a practical and important consideration because the compound promises to be scarce and expensive in the immediate future. Further, if toxic manifestations should be met with prolonged administration, then theoretically they should be encountered less frequently with smaller doses. Limited supplies of the compound permitted only 3 pilot experiments, but the results in these were promising.

Two patients with moderate and 1 patient with mild but definite rheumatoid arthritis were given 50 mg. of cortisone daily (for ten to fifteen days) until the clinical manifestations had subsided almost completely and the sedimentation rates had returned to normal. Thereafter doses of 50 mg. of the agent were given every other day for twenty-one days.

REPORT OF CASES

CASE 1.—G. H., a housewife aged 44, had chronic rheumatoid arthritis of two years' duration. The articular manifestations were restricted to a few joints: both wrists, the second right proximal interphalangeal joint and the second and fifth metacarpophalangeal joints of both hands, which were moderately swollen, tender and painful on motion. The left ankle was moderately swollen and painful on weight-bearing. Constitutional symptoms were mild, and the erythrocyte sedimentation rate prior to administration of cortisone was 35 mm. in one hour.

Fifty milligrams of cortisone were given daily for ten days. On the second day mental stimulation and a sense of well-being developed. On the third day stiffness and rest pain began to subside, and on the fifth day significant reductions in joint tenderness and swelling were apparent. Improvement continued, and by the tenth day all objective signs had disappeared except for slight tenderness of the fifth right metacarpophalangeal joint and slight residual thickening of the second and fifth metacarpophalangeal joints of both hands. Slight stiffness of the fingers when the patient awakened each morning, lasting for approximately ten minutes, was the only subjective complaint which remained. The erythrocyte sedimentation rate was reduced from 35 to 16 mm. in one hour. The dosage was now changed, and 50 mg. of the compound were given every other day for a period of two weeks. During this period symptoms and objective manifestations gradually returned. The patient experienced also two bouts of acute joint swellings (on the fourth and fifth days), each lasting from twenty-four to thirty-six hours. The erythrocyte sedimentation rate increased to 29 mm. in one hour. The initial dosage of 50 mg. of cortisone daily was reinstituted and continued for ten days. Again the clinical manifestations receded rapidly, and by the fourth day the improvement equaled that attained originally. The erythrocyte sedimentation rate was decreased to 11 mm. in one hour on the tenth day. A dosage of 50 mg. of the preparation given every other day was instituted for the second time and continued for three weeks. During this period joint stiffness and tenderness gradually increased and the sense of well-being lessened. Although the patient was still greatly improved, the disease was not controlled as adequately as it had been when daily doses of 50 mg. of cortisone were given.

CASE 2.—K. W., a housewife aged 49, had typical clinical manifestations of rheumatoid arthritis for four months; during this time she experienced moderate general constitutional symptoms. Before the administration of cortisone the objective manifestations were restricted to five joints: the right wrist and the second and third metacarpophalangeal joints of the left hand were moderately swollen, tender and limited in motion; and both ankles were moderately swollen, tender and painful on weight-bearing. The erythrocyte sedimentation rate was 44 mm. in one hour.

Cortisone was given in doses of 50 mg. daily for fifteen days. All subjective and objective manifestations subsided by the eleventh day except for mild aching, stiffness, limitation of motion and moderate pain on forced motion of the right wrist. After fourteen days the only residual symptom in this joint was slight pain at the extremes of motion. The erythrocyte sedimentation rate was reduced to 12 mm. in one hour. The dosage of cortisone was then decreased to 50 mg. every other day and continued for three weeks. The ankles and metacarpophalangeal joints remained objectively normal and asymptomatic. Aching, stiffness and pain on forced motion of the right wrist increased slightly, mental stimulation lessened and the erythrocyte sedimentation rate increased to 30 mm. in one hour.

CASE 3.—E. M., a woman aged 42, had experienced aching and stiffness in various peripheral joints and recurrent swelling in the proximal interphalangeal and metacarpophalangeal joints of the hands for approximately three years. For three months prior to the administration of cortisone the symptoms were more pronounced and persistent swelling developed in the fourth and fifth proximal interphalangeal and the second and fifth metacarpophalangeal joints of the right hand. The right wrist was moderately swollen, tender and painful on forced motion. Moderate constitutional symptoms, particularly fatigue and anorexia, had been present for three years. The erythrocyte sedimentation rate was 26 mm. in one hour.

Cortisone was administered to the patient in 50 mg. doses daily for twelve successive days. By the fifth day the constitutional symptoms disappeared; she felt "full of pep" and began to go out socially during the day as well as at night. By the tenth day joint swellings had entirely subsided and the only remaining objective manifestation was slight tenderness on deep pressure of the right fifth metacarpophalangeal joint. Subjectively her only complaint was mild early morning stiffness of the fingers, lasting approximately thirty minutes. The erythrocyte sedimentation rate was diminished to 6 mm. in one hour by the twelfth day. The dose of cortisone was then reduced to 50 mg. every other day and continued for three weeks. Except for increase in morning stiffness, the initial improvement was retained.

Definite conclusions cannot be drawn from short term studies in 3 cases. However, results suggest that smaller doses of cortisone, 50 mg. daily or perhaps less in some cases, may be sufficient to control adequately cases of mild and moderate rheumatoid arthritis. Whereas the clinical manifestations subsided almost entirely with daily injections of 50 mg. of the compound, there did remain some residue of the disease, even though slight, in each case. This indicated that the patients were not entirely well and that, although the disease was greatly suppressed, complete remissions had not been invoked. The clinical manifestations were not controlled as well when the dose of cortisone was reduced to 50 mg. every other day. Before the administration of cortisone each patient was somewhat depressed mentally. With doses of 50 mg. of the agent a day each became mildly euphoric and acquired a sense of well-being which was greater than normal. With reduction of the dose to 50 mg. every other day, euphoria disappeared but depression did not recur; mentally each patient felt "about normal."

SUMMARY

The adrenal cortical hormone, cortisone acetate (compound E acetate: 17-hydroxy-11-dehydrocorticosterone acetate) was administered for short or relatively short periods to 8 patients with rheumatoid arthritis. Definite, but temporary, improvement in the clinical and certain laboratory features of the disease resulted in each case.

Five of the eight patients had severe rheumatoid arthritis and were given large doses of cortisone acetate for short periods (total of 1 Gm. in divided doses for eight days). The immediate results were decidedly pronounced improvement in 3, pronounced improvement in 1 and moderate improvement in 1. Prompt or fairly prompt relapse of the disease, with return of clinical manifestations approximately to their original severities, occurred after withdrawal of the endocrine preparation in 4 of the 5 cases. The fifth patient retained, 2 months after discontinuance of the use of cortisone, approximately 75 per cent of the initial improvement.

Three additional patients with less severe rheumatoid arthritis (2 with moderate and 1 with mild disease) were given smaller doses of the drug for longer periods. With daily doses of 50 mg. the symptoms and objective observations were adequately, but not completely, controlled. Doses of 50 mg. of cortisone acetate given every other day were not as effective in controlling the clinical manifestations.

Because of the small number of cases reported and the brief periods of administration of cortisone, definite conclusions cannot be drawn. However, the results in 8 cases indicate that this adrenal cortical preparation, when given in large or relatively large doses, will rapidly suppress the clinical manifestations of rheumatoid arthritis. The results reported herein confirm the observations made originally and described recently by Hench, Kendall, Slocumb and Polley.

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THE FAMILY DOCTOR

. . . An Epidemiologic Concept

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The picture of the family doctor has been drawn by greater artists than I. In his role as confidant and confessor, busy but patient, sometimes limited in preparation but long in understanding, he created a position which deeply influenced the decisions of the family and community. Through long and intimate acquaintance he learned the social and economic stresses of his flock, the hidden errors and the familial blights to be encountered. He encouraged the promising and helped cushion the realities and failures of the less successful. His position as sociologist and practical psychologist has not been filled in the community, for the industrial revolution and the present industrial revolt have changed the atmosphere of the growing community from one of neighborly sharing in the intimate pleasures and problems to one in which sociologic interest is too largely official and too often accompanied with political aspirations. The vanishing of this priesthood has been hastened by the times rather than by medical progress. However, Davis Riesman,[1] in his excellent essay on the family physician, points out that the results of preventive medicine, the rise of specialism in medicine and the great advances in laboratory aids—all of which I ascribe to the times—have tended to eliminate the doctor of the old school. One other feature is important: the less frequent visiting by the doctor at home, where the environment could be sensed and other members of the family would be encountered. It is my purpose not to attempt an analysis of all the contributing influences but at this point to accept the fact that the family doctor, the servant and preceptor of the community, as traditionally immortalized in fact and fiction, has been slowly retiring before current trends.

However, the changing scene has not been without its recompense. The understanding of disease as a problem interpretable in terms of the community has been greatly advanced by the combination of ecologic, clinical and laboratory investigations. And it is for this reason that I should like to reestablish the modern physician as the family doctor, employing the available evidence of the role of the family as a unit of disease. The epidemiologic outlook affords a basis for early identification of the abnormal and by anticipating the situation permits more effective maintenance of health and the application of preventive medicine.

THE FAMILY

The family can be considered in different perspectives. As a household ". . . it includes the related family members and also the unrelated persons, such as lodgers, servants or hired hands,"[2] and, for the purposes of this paper, the attached flora and fauna. In other words, this is a group brought together under communal conditions, sharing the same facilities for the ordinary purposes of life. Although officially insti-

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Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1949.

[1] Riesman, D.: Medicine in Modern Society, Princeton University Press, 1939, p. 145, Princeton, New Jersey.

[2] Population Characteristics, Series P-20, no. 16, Bureau of Census, United States Government Printing Bureau, May 5, 1948.

tutions, barracks or camps do not constitute households, they do represent epidemiologic families by virtue of the common life of their occupants.

The other concept of a family is that based on blood or marital relationship. In these circumstances the genetic factor is the one of interest, extending beyond a single household and even into several generations. The blood lines and their accompanying peculiarities may thus be of greatest importance to the thesis of this article.

The rate of migration and the well defined individuality of present day life have served to disrupt the continuity of the family as a unit in a given community as well as to reduce the probability that a single physician could keep the group under observation for an extended period. Even the official health agencies have specialized the family through divisions such as maternal and child health, school health and industrial health, instead of a total approach to family health. Despite this decreased opportunity to supervise the entire family, accumulated information now allows the physician who sees but a single member of the family in distress to state probabilities as to the status of the others and thus serve the family as a whole. The role of psychologist has been amply stressed by others, and I shall elect to suggest the broader function in organic disease.

EXAMPLES FROM INFECTION

In the field of infection physicians are increasingly confronted by the fact that the case of what is termed the typical disease is so likely to be the incident or accident of group infection. It is commonplace that meningitis is a random accident in the course of infection with Meningococcus and that a large proportion of intimate associates of the patient may be infected with the same organism without displaying significant signs of disease. So, too, with the patient whose lobar pneumonia is due to type I Pneumococcus. A majority of the other members of the family may be infected with the same organism. They may present little clinical evidence of illness or may have what passes for a cold or a mild sore throat—or apparent otitis or sinusitis. The case of pneumonia is the accident. The family represents a concentration of infection of continued risk to itself and to the community.

The problem of streptococcic disease has been largely dominated by clinical terminology, but now it is clearly seen that within the infected group the same organism may be associated with a wide range of reaction, from the subclinical infection, through frank disease, to the secondary phenomena of rheumatic fever and acute nephritis. In this instance, again, the clinical case may be the exceptional feature acting to turn the spotlight on the probability of a highly infected group. Granted that it is not at present practicable accurately to determine the duration of the individual infectiousness of each member, it is equally undesirable to ignore the risk which such groups offer to the rest of the population. Although the studies of Hamburger and others have largely been conducted in barracks or hospital wards, their demonstration of the high contaminating potential of the chronic nasal carrier would seem readily applicable to school room or occupational groups.

Hence, whether seen in the office, the clinic or the hospital, observation of a patient with a frank case of disease due to the aforementioned agents should call the attention of the physician to the family, with the purpose of limiting the spread or the severity of infection among the individual members, of reducing the possibility of chronic sequelae and of cutting down the danger to the community.

The approach indicated here has been so completely applied in the control of typhoid and tuberculosis as to constitute the major attack. For example, the studies of Ramsey [3] and of Stebbins and Reed [4] in the state of New York have demonstrated that the probability of contracting typhoid was from 1,200 to 1,900 times greater in a familial associate of a patient with the disease than in the general population; that the incidence of typhoid among familial associates of a carrier was 42 times greater than in the general population. To state it another way, 7 per cent of familial associates of patients with typhoid contracted the disease, and the poorer the sanitary facilities the higher the rate. The actual data for infection would undoubtedly be greater, because a considerable portion of persons so exposed may undergo active infection without having their disease diagnosed as typhoid.

The detection of tuberculosis by study of the familial associates of patients with identified disease is the most productive method, even though the extensive programs tend to miss the adult members who contribute the greatest number of cases. The closer the association with a tuberculous patient in the household, the greater the frequency of infection and disease.[5]

The intensity of family infection can be further illustrated by two virus diseases, poliomyelitis and infectious hepatitis. Although it continues to be said that more than 1 case of poliomyelitis in a family is unusual, it has been clearly demonstrated that the probability of an additional paralytic case in a family in which one has already appeared may be 25 times greater than the incidence in the rest of the population. Our 1943 studies in Texas [6] and those of Gordon and his associates in Chicago [7] reveal that the frequency of virus infection among familial associates, as measured by the demonstration of virus in stools, may be 30 to 40 times greater than that among those without known association with the disease. Furthermore, these positive observations represent active infections, readily acquired. For instance, in the study of a family, by Zintek of this department,[8] it was found that four days after all specimens from a family were negative for poliomyelitis virus, a case of nonparalytic disease occurred in the family and that in another five days 2 more cases had occurred and virus was present uniformly in the stools of the parents and the children, and in the throats of the children. Furthermore, 3 of 4 members of the family continued to show virus in the stools when tested three weeks later. Additional evidence of the continued infection is seen in the studies made in four families from Detroit.[9] Most of the children were infected, 3 of them yielding consistently positive stools for four to five weeks. Although in this series the apparently well adults did not yield virus, 2 of the 4 clinical cases occurred in adults. Moreover, in other studies the persistence of subclinical infection among the associated familial adults has been amply demonstrated.

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[3] Ramsey, G. H.: Typhoid Fever Among Household Contacts with Special Reference to Vaccination, Am. J. Hyg. **21:** 665, 1935.

[4] Stebbins, E. L., and Reed, E.: Carrier-Borne Typhoid Fever in New York State with Special Reference to Attack Rates Among Household Contacts, Am. J. Pub. Health **27:** 233, 1937.

[5] Chadwick, H. D., and Pope, A. S.: The Modern Attack in Tuberculosis, New York, The Commonwealth Fund, 1942, p. 63. Opie, E. L.: Tuberculosis Infection in Children and Adults; Relation of One to the Other, J. Outdoor Life **24:** 274, 1927.

[6] Pearson, H. E.; Brown, G. C.; Rendtorff, R. C.; Ridenour, G. M., and Francis, T., Jr.: Studies of the Distribution of Poliomyelitis Virus: III. In An Urban Area During an Epidemic, Am. J. Hyg. **41:** 188, 1945.

[7] Gordon, F. B.; Schabel, F. M., Jr.; Casey, A. E., and Fishbein, W. I.: Laboratory Study of the Epidemiology of Poliomyelitis, J. Infect. Dis. **82:** 294, 1948.

[8] Zintek, A. R.: The Rapid Infection of a Family After Introduction of Poliomyelitis Virus, Am. J. Hyg. **46:** 248, 1947.

[9] Brown, G. C.; Francis, T., Jr., and Ainslie, J.: Studies of the Distribution of Poliomyelitis Virus: V. The Virus in Familial Associates of Cases, J. Exper. Med. **87:** 21, 1948.

Infectious hepatitis, formerly designated catarrhal jaundice, is again a virus infection in which the group characteristics of the infection are prominent. Its eruption in institutions, military units and camps is well known, but all too often in the general population the physician may see only the apparently sporadic case. Pickles, in his charming exposition of "Epidemiology in Country Practice,"[10] has followed in his community of practice the familial distribution of that disease. To illustrate the familial concentration I would refer to an epidemic studied by the staff of the Epidemiology Department[11] in 1944 in Central Michigan in a population of essentially 400 persons. Thirty-three families consisting of 155 persons were involved; of these 75, or 44 per cent, had infectious hepatitis and in twenty families multiple cases occurred. The largest family of 10 persons had 7 cases, including the only fatality. The primary cases centered about the village school, embracing the age group of 5 to 10 years; *45 of the 61 children so exposed became ill* (figs. 1 and 2). In only 6 instances did the first case observed in a family occur in another age group, and even then there had been some close association with the school and its children. The subsequent dissemination in the families emphasizes the concentration of infection in families to which the infected school child belonged. It emphasizes, too, that in infectious hepatitis there is a large body of concealed infection and suggests that recognition of a single case of hepatitis with jaundice should center attention on the infected family.

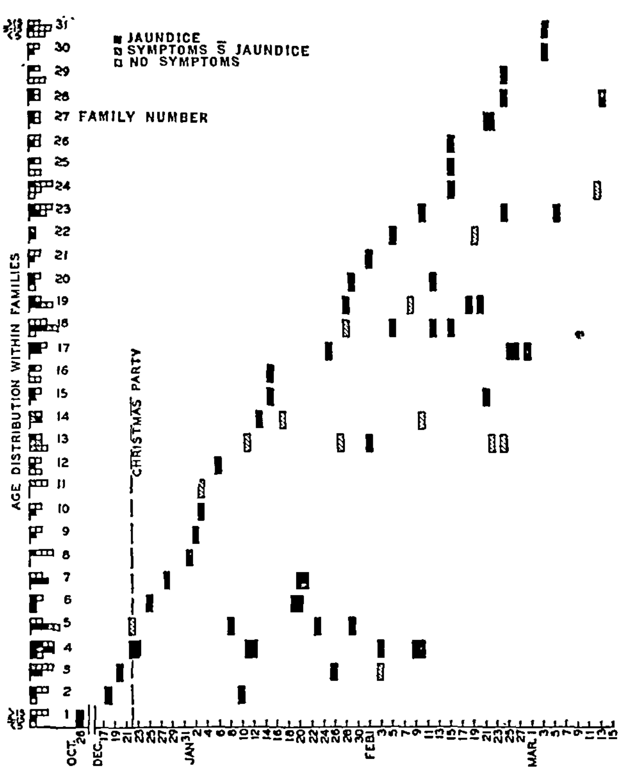

Fig. 1.—Familial distribution of 70 cases of infectious hepatitis.

Examples from the field of infection could be multiplied to cover a wide range of mechanisms of transmission and the influences of environment, as with brucellosis and the farm household. The minor foibles, habits and taboos of the family often result in their exposure to agencies which would not otherwise give rise to group disturbances. The familial concentration of pellagra is a striking evidence of the effect of familial habits on the health of the unit.

EXAMPLES IN METABOLISM

Turn now to the genetic family. The instances of developmental and anatomic aberrations of an inheritable nature are manifold, and recognition of them promptly calls attention to the possibility of their presence in other members of the family. Certain of the blood dyscrasias clearly follow a genetic pattern.

It seems evident, also, that genetic influences may play an important role in the responses of certain family groups to infection. Rheumatic fever is a case in point. There is a familial tendency toward aggregation of this disease in family clusters, while other families apparently undergo the same experiences without that result. *Still other families appear to be relatively resistant to streptococcic infections at any level.* The rheumatic family has been studied, from the genetic point of view, especially by Wilson,[12] who concluded that hereditary susceptibility underlies the familial incidence of the disease. One may suggest that this, too, could represent a defect in the metabolic process required for disposal of certain products of streptococcic infection. St. Lawrence[13] in 1922 stated the problem on the basis of his familial studies: "... from the facts at present available no conclusions can be reached as to the relative importance of inherited susceptibility and dissemination by close contact between infected and noninfected persons." Again, "... *it would seem imperative* that physicians, on discovery of rheumatic infection or cardiac disease in one member of a family, should strongly recommend the examination of all other members of that family for evidence of these conditions. ... the 'family group' will assume increased significance in the dissemination of rheumatic infection, and therefore of cardiac disease, and offer an important place for the intensive application of such preventive measures as are available."

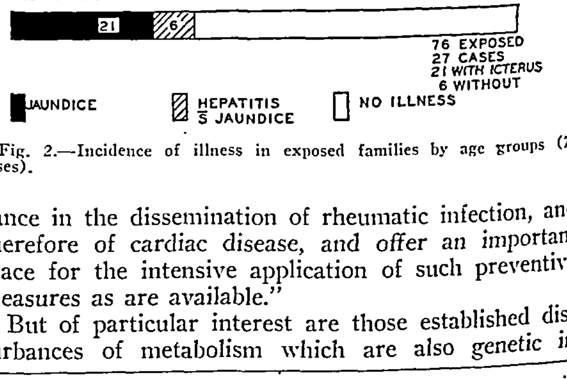

Fig. 2.—Incidence of illness in exposed families by age groups (75 cases).

But of particular interest are those established disturbances of metabolism which are also genetic in character. Allergy may be one of them. Diabetes and thyroid disturbance are others. Since they may have a definite relationship to the aging process and vascular degeneration, attention is called to those associated with lipid metabolism. In the case of xanthomatosis, or hypercholesterolemia, the cutaneous lesion is sufficient to direct investigation to a widely distributed metabolic disturbance in the family. There is increased interest because these abnormalities are associated with coronary sclerosis and cardiac death before maturity. Wilkinson, Hand and Fliegelman[14] have reported a study of 282 members of a family in four generations. Of these, 159 were thoroughly investigated and 30, or 20 per cent, were found to have hypercholesterolemia; 3 of them died sudden, presumably cardiac, deaths before the age of 20. Bloom, Kaufman and Stevens[15] reported a family in which 4 children died of coronary disease at the ages of 23, 18, 14 and 6½ years. There are many examples in which some obvious clinical lesion can indicate a broad familial defect, which could be explored with profit to the health of the family.

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[10] Pickles, W. N.: Epidemiology in Country Practice, Baltimore, Williams & Wilkins Company, 1939.

[11] Unpublished data.

[12] Wilson, M. G.: Familial Epidemiology of Rheumatic Fever, in Rheumatic Fever, New York, The Commonwealth Fund, 1940, chap. 3.

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THE PLAN OF ACTION

The observation that disease might run through a family or an intimate group is as old as disease itself, and the realization that there is considerable variation in the response of different members of the group is also of long standing. Moreover, with the advent of the bacteriologic era the importance of the clinically unrecognized and of the carrier infection became apparent as sources of risk. Chapin[16] and Frost[17] emphasized the study of the family group for a measure of the transmissibility of disease in terms of the secondary attack rate. And it is certain that with the advent of diphtheria antitoxin for prophylaxis the family physician came rapidly to realize that the frequency with which the disease might run through families could be sharply reduced.

With that exception, however, there was little to offer but isolation and quarantine. And the effectiveness of these latter procedures has been so limited by economic demands and by the inability to apprehend a large proportion of infected persons that the measures have come to be considered of little value. Nevertheless, in tuberculosis the opposite view of isolation is strongly maintained. There is an important contradiction in this behavior. It is apparent in many of the infections that association with the frank case of disease does not account for the majority of new cases. The missed case and the carrier therefore are accepted as definite hazards. Some authorities tend, however, to ascribe much of the importance in dissemination to the acute stage of the missed case while minimizing the role of the carrier, who is in reality an example of active acute infection. This seems to be an exercise in semantics. The more acute the disease the less readily are the missed case and the inapparent infection differentiated. The carrier of the enteric organisms is accepted as a constant risk if he is provided opportunity to effect the transfer of his organisms. The tuberculous patient who continues to put out organisms is a recognized hazard. The patient with streptococcic sinusitis is a remarkably rich source of infection, whether he is in the early febrile stage or not. The term carrier tends to connote a passive acceptance of organisms, but properly it should be realized that where the organisms are maintained they multiply and the host is infected. He may follow a course of infection comparable in terms of microbial growth to that of the frank case, leading finally to elimination of the agent or to chronic infection. To return, then, to the traditional "case of disease" in the family; since it is realized that it commonly represents the crop line of a greater bed of infection in the family cluster, should not this unit of greatest density of infection be treated as a group of acute infections? It is difficult to accept the idea that to permit these persons with active infections to move freely without some effort to erect a barrier between them and the susceptible members of the community can do other than increase the dissemination.

The progressive availability of drugs and antibiotics against a wide range of infectious agents offers a new hope in this respect. The efficacy of small doses of sulfonamide compounds in curing the subclinical infections caused by meningococci immediately recommends their employment in any familial unit in which a case of meningitis of that nature occurs. The influence of sulfonamide drugs and penicillin on pneumococcic and streptococcic infections of the upper respiratory tract is less dramatic, but there is sufficient evidence to indicate that a bacteriostatic effect can be obtained or that initiation of infection can be avoided. In the Salmonella infections, chloramphenicol (chloromycetin®); in the dysenteries, sulfonamide compounds; in infectious hepatitis, gamma globulin may be used. For poliomyelitis there is no specific prophylactic or therapeutic agent to be recommended. Nevertheless, as has repeatedly been emphasized, if control measures are to reduce the spread of that disease from one person to another, the families of the patients with recognized cases constitute the units exhibiting the greatest density of infection toward which attention should be strongly directed.

It is not intended to urge that present products be used indiscriminately or without weighed judgment; the objective of limiting the course of infection and reducing the density of infection in the community is the important concept. Too often the physician is guilty of treating the individual patient; too commonly public health authorities are guilty of concentrating on the number of cases, and the administrative approach is too largely governed by severity of disease. No one knows how much the degenerative disturbances of later life are related to the effects of the simple diseases of childhood. Without concern for the future of naturally acquired immunity, active prophylaxis seems desirable, and as prophylaxis increases experience has repeatedly proved that the risk of infection in the community declines.

SUMMARY

The purpose of this article has been to emphasize the fact that the present day physician can become once more the family doctor, whether he sees the patient at home, in the office or in the hospital, by the use of epidemiologic data such as have been presented. Moving along the lines suggested, he can advance as a conservator of health and in the promotion of preventive medicine. By continued recording of the distribution of disease in the families and in the community he serves, the physician can add greatly to progress in the field of epidemiology and constantly function in the foreground of efforts toward the control and elimination of disease.

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MODIFIED PROTAMINE INSULIN (NPH-50)

A Clinical Report

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This article is a clinical report on the use of modified protamine insulin (NPH-50)—first, what it is; second, why it is indicated; third, how does it differ from present market insulins; fourth, what has been the experience of the Joslin Clinic in its use; fifth, what technics have been employed in its administration, and, sixth, what are its failures as well as its successes?

Insulin of the NPH-50 type contains protamine modified by crystallization. Neutral in reaction, it is designated N; protamine, it is termed P; improved by Hagedorn, it is named H; modified by the addition of 0.50 mg. of crystallized protamine for every 100 units of insulin, it is tagged 50—therefore, NPH-50 insulin.

New modifications of insulin are being and should be sought. Wonderful though insulin is, the forms now available have three obvious defects; first, their administration is parenteral; second, their time of action is too slow, too short or too long, and third, their hypoglycemic effect may be of abnormal degrees. The ideal insulin has been defined by Best and by Hagedorn as depot in type and one which releases insulin as tissue sugar rises and withholds it as tissue sugar falls, thereby controlling hyperglycemia and preventing hypoglycemia. Since this ideal insulin of the physiologist is not available, clinicians clamor for an insulin practical in nature with instant availability and with twenty-four hour action. Modified protamine insulin has some of the desired clinical properties.

The blood sugar lowering action of modified protamine insulin is relatively quick, because it begins some two hours after administration compared with one hour for regular and crystalline, one to two hours for globin and six to eight hours for protamine zinc insulin. The maximum blood-lowering action occurs some ten to twenty hours after administration compared with three hours for regular and crystalline, six hours for globin and twenty-four hours for protamine zinc insulin. The duration of action is long, namely, twenty-eight to thirty hours, compared with six and eight hours for regular and crystalline, respectively, fifteen for globin and up to seventy-two hours for protamine zinc insulin. In mixtures the modified protamine insulin adsorbs less of added crystalline insulin than does market protamine zinc insulin. The greater degree of adsorption by protamine zinc insulin occurs because it contains 1.25 mg. of protamine for every 100 units of insulin, in contrast to 0.50 mg. in the modified preparation.

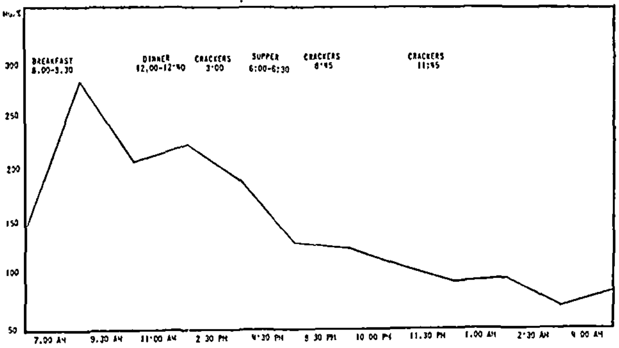

Chart 1.—Composite curve of levels of capillary blood sugar of 7 patients receiving modified protamine insulin (NPH-50) on a typical camp day.

Insulin of the modified protamine type is therefore relatively quick in action, for it lags two hours only, has long duration of action—some twenty-eight hours—and has nocturnal hypoglycemic hazard rather than the more dangerous daytime hazard. From this description it is evident that the modified protamine insulin resembles the popular 2:1 mixture of crystalline and protamine zinc insulin.

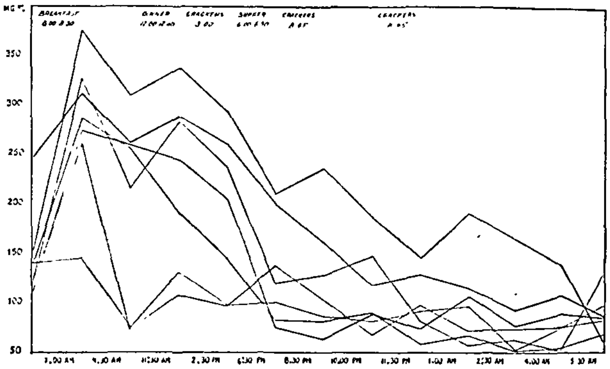

Chart 2.—Individual curves of levels of capillary blood sugar of 7 patie-ts receiving modified protamine insulin (NPH-50) on a typical camp day.

Between June 1948 and June 1949, 336 patients of the Joslin Clinic were treated with modified protamine insulin.[1] This group consisted largely of patients whose diabetes was characterized by its severity and in whom chemical control had been difficult. The majority, 260, were patients under the age of 20 years and the other 76 were adults. The group of patients under 20 years of age were taken consecutively from the clinical material. The choice of the adults was a selective one; obstetric patients with diabetes comprised 21 of the number, and the 55 others were chosen because of great sensitivity to insulin. In addition to the 336 patients, comparison studies were made by Dr. Alexander Marble on a group of patients whose diabetes was mild and who were hospitalized for their surgical complications. The series of 336 patients is overloaded with young diabetic persons because severity and lability characterize juvenile diabetes, and experiences with them can be used as a therapeutic guide in all patients whose diabetic management is difficult.

Adjustments to modified protamine insulin were made, first, at our two summer camp units; second, in the Deaconess Hospital, and, third, in the office. The greatest number (203) of the patients were transferred to modified protamine insulin at the summer camp units. One hundred and twenty-four girls were treated at the Clara Barton Camp under the direction of Dr. Ruth E. Reuting and myself and 79 boys at the Elliott P. Joslin Camp under the direction of Drs. A. J. Gabriele and Alexander Marble. Office regulation was accomplished in 35 patients, and 98 were hospitalized.

Fasting experiments were not conducted; however, after stabilization on the modified protamine insulin a small group of children had capillary blood sugar determinations at approximately two hour intervals on a typical camp day. The Folin micro method was used.

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Read before the Joint Meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1949.

[1] The modified protamine insulin was supplied by Eli Lilly and Company.

The average curves for the 7 girls (charts 1 and 2) whose blood sugar levels were determined in the morning at 7, 9:30 and 11; in the afternoon at 2:30 and 4:30, in the evening at 8:30, 10 and 11:30 and during the night at 1, 2:30, 4 and 5:30 showed a rise to abnormal values in three periods only; namely, at 9:30 after breakfast, at 11 in the morning and at 2:30 in the afternoon after lunch. The average blood sugar values for the remaining nine periods were all at normal levels. The lowest average occurred at 4 a. m., twenty hours after administration of the insulin. The experience with diabetic boys was similar.

After they had been stabilized with separate injections of crystalline and protamine zinc insulin and again after they had been stabilized with a single injection of modified protamine insulin, the levels of the blood sugar at 7 o'clock (fasting), in the morning at 11, in the afternoon at 4 and in the evening at 8 were determined in 72 girl campers.

The average blood sugar level was lower at each year of age fasting, at 4 p. m. and at 8 p. m., when modified protamine insulin was administered in a single injection; the average blood sugar level for each year of age was lower at 11 a. m. when separate injections of crystalline and protamine zinc insulin were administered. The experience with diabetic boys was similar. In juvenile diabetic campers a single injection of the modified protamine insulin controlled diabetes chemically as well as, if not better than, separate injections of crystalline and protamine zinc insulin.

The adults who had a mild form of diabetes and had surgical complications were transferred readily to modified protamine insulin therapy. Patients of this type, however, do not present difficulties in diabetic management, and the disease can be controlled chemically without difficulty with each type of insulin. Of the insulin-sensitive adults, three quarters of the number were controlled more easily with modified protamine insulin than they were before, but one quarter of them did not show improvement. The seriousness of hypoglycemia in this group cannot be overemphasized. Jobs are at stake, professional judgment is disturbed and the care of young children is a risk.

The results in the obstetric cases were encouraging. Low renal threshold for dextrose characterizes the pregnant diabetic woman and is one of the causes for her susceptibility to ketosis and hypoglycemia. Therefore our scheme for insulin therapy has included separate injections of crystalline and protamine zinc insulin before breakfast, supplemented by crystalline insulin before lunch, dinner and even at bedtime. In 60 per cent of these patients a single injection of modified protamine insulin replaced multiple injections.

Although the evaluation of a new form of insulin should be made on patients under direct medical supervision, practical evaluation of insulin therapy in the diabetic subject must include a survey of the results among patients controlling their own treatment. Therefore clinical success with modified protamine insulin was measured further: first, by the degree of chemical control after the patients were discharged from camp and hospital; second, by freedom from reactions; third, by freedom from bouts of acidosis, and fourth, by the maintenance of proper nutritional levels and by the promotion of normal rates of growth and development. Bouts of coma and reactions of severity were infrequent. Nine, or 3 per cent, of the patients had reactions which required their hospitalization; 3, or 1 per cent, had diabetic coma. Gain in weight and growth in height were superior to previous levels and rates. There was 1 fatality, a cardiac death. The range of 638 random blood sugar levels after discharge was wide, but 40 per cent were below 200 mg. and 70 per cent below 300 mg., per hundred cubic centimeters. Modified protamine insulin is not a panacea which does away with the need for adherence to diet or for the continuation of insulin therapy.

The technic used for the readjustment from crystalline and protamine zinc insulin to modified protamine insulin was simple. The sum total in units of all previous doses of insulin was given. It was learned quickly that most patients required in units larger doses of insulin in the modified protamine form than in the sum total of crystalline and protamine zinc types. The aim of treatment was freedom from sugar and the maintenance of normal levels of blood sugar.

The most important single test for the regulation of modified protamine insulin, as it is with all long-acting insulins, is the true fasting test, which should be aglycosuric or nearly so. Hyperglycemia and glycosuria occurring at premeal and retiring periods in the presence of a perfect fasting test indicate the need for adjustments other than that of modified protamine insulin, such as reapportioning of the diet. Carbohydrate may be subtracted from the offending meal and added to the diet in the latter part of the day when modified protamine insulin is most effective. The prescription of exercise is also useful. Since little adsorption of quick-acting insulins occurs in mixtures of crystalline and modified protamine insulin, early daytime glycosuria may be prevented by such an addition. Glycosuria occurring in the evening may be prevented by the addition of a supplementary dose of insulin (crystalline) before the evening meal. The addition of rapidly acting insulin was seldom necessary in the group under observation.

Comparison of Blood Sugar Determinations After Stabilization with Crystalline, Protamine Zinc and Modified Protamine (NPH-50) Insulin

		Diet at Entrance				Diet at Discharge				Weight (Lb.)		Insulin				Blood Sugar (Mg./100 Cc.)							
																Before			NPH-50			After	NPH-50
Age	No of Cases	C.	P.	F.	Cal.	C.	P.	F.	Cal.	Entr.	Disch.	Crystalline	Prot. Zinc	Total Units	NPH-50	F.	11	4	8	F.	11	4	8
2	1	115	58	64	1268	115	58	64	1268	....	....	6 +	11	17	26	105	305	305	320	89	276	185	191
3	1	142	68	76	1524	168	75	87	1755	35.0	39.0	10 +	4	14	34	164	183	283	257	61	261	55	148
5	2	151	74	75	1505	151	74	75	1575	40.3	42.5	11 +	15	26	37	103	155	130	305	104	150	198	132
6	6	159	74	79	1573	176	81	89	1829	49.5	50	11 +	13	24	31	117	148	162	211	109	110	149	133
8	6	178	82	89	1841	182	82	88	1848	60.8	61.2	11 +	18	29	36	208	123	182	253	183	182	176	156
9	9	184	86	99	1971	192	88	92	1948	65.4	65.4	11 +	26	37	43	150	146	206	248	116	231	179	225
10	6	198	92	95	2015	204	96	96	2064	73.5	74.4	14 +	16	30	34	135	126	183	206	115	155	168	161
11	8	201	99	100	2100	220	106	107	2267	79.5	82.7	15 +	26	41	49	127	115	191	317	97	170	115	158
12	8	212	107	106	2230	225	112	109	2329	90.3	92.0	20 +	39	59	62	162	189	204	299	132	149	183	197
13	7	206	103	102	2154	221	112	108	2304	93.4	95.1	17 +	32	49	50	127	114	164	205	118	178	132	163
14	6	207	103	101	2149	205	99	97	2089	116.0	117.1	19 +	58	77	84	164	168	171	227	105	228	188	180
15	7	204	102	95	2079	210	106	99	2155	115.0	114 6	22 +	47	69	67	171	200	204	299	145	220	148	158
16+	5	200	99	96	2060	209	106	100	2160	119.9	120.9	22 +	44	66	77	149	104	159	246	199	215	154	169

The caloric prescriptions commonly used in the Clinic were continued, namely, 30 calories per kilogram of ideal body weight for adults, 30 calories per kilogram of increasing body weight for the pregnant diabetic persons and 1,000 calories for age 1, with 100 added for each year in childhood. The range of carbohydrate was from 150 to 250 Gm. daily. The carbohydrate for breakfast was maintained at a low level, one fifth of the total; one fifth to two fifths were prescribed for lunch and two fifths to three fifths for supper. Midmorning lunches were omitted, but small lunches of 10 Gm. of carbohydrate were given to the children in the afternoon and a lunch of at least 20 Gm. of carbohydrate was given to all patients at bedtime.

The most conspicuous failures with modified protamine insulin occurred in those few patients whose requirement for rapidly acting insulin is great in proportion to that of slowly acting insulin. This is commonly observed in very young diabetic children, among whom unexpected prelunch reactions occurred and severe night time hypoglycemia was not uncommon.

CONCLUSIONS

1. In few instances, only 5 per cent of the patients treated, a single injection of modified protamine (NPH-50) insulin was less successful in controlling diabetes than were separate injections of crystalline and protamine zinc insulin. These few failures included one fourth of the insulin-sensitive adults treated, the majority of the diabetic children under 5 years of age and those patients whose requirements for long-acting insulin are small compared with their requirements for quick-acting insulin.
2. In 95 per cent of the 336 persons with severe diabetes modified protamine insulin was used as successfully as, if not more so, than separate injections of crystalline and protamine zinc insulin.
3. Regulation of diet and exercise is a necessary adjunct to treatment with modified protamine insulin in order to maintain chemical control. With the patient under medical observation it was seldom necessary to add, or supplement with, rapidly acting insulin.
4. Modified protamine insulin combines long duration of action with rapid availability. When administered before breakfast, its hypoglycemic hazard is nocturnal.
5. Modified crystallized protamine insulin (NPH-50) is a desirable insulin for the treatment of severe labile diabetes.

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ABSTRACT OF DISCUSSION

Dr. Cyril M. MacBryde, St. Louis: Many groups of workers throughout the world have continued to study the problem of finding a satisfactory form of insulin which will, with a single injection daily, establish good control of the blood sugar throughout the twenty-four hours. Only one of the intermediate types of insulin, globin insulin, has reached the market. Globin insulin has proved unsatisfactory for the majority of patients with moderately severe or severe diabetes. Another type of modification which has been used is the mixture of crystalline or regular insulin with protamine zinc insulin. There are many possible variations of such mixtures. A superior type of fixed or standard protamine insulin modification was developed, called NP-50 which has 25 per cent of its insulin in solution and 75 per cent in the precipitated protamine insulin component. The blood sugar curves with this insulin modification have in our experience been the most satisfactory that we have been able to get with any type of insulin. This NP-50 insulin differs from the NPH-50 insulin which has been described by Dr. White in that it has 25 per cent of the insulin in solution, whereas in the NPH-50 insulin all the insulin is in precipitated form. It seemed highly desirable to have such an insulin as NP-50 with its biphasic insulin components and good twenty-four hour control of the blood sugar. However, the insulin manufacturer informed us that NP-50 insulin apparently cannot be manufactured in stable form. Therefore, about a year ago the NPH-50 modification was developed and furnished to several groups of investigators for study. The NPH-50 insulin we have studied is the same as the modified protamine insulin on which Dr. White has reported. We agree that it gives a fairly good intermediate type of effect; but the twenty-four hour blood sugar curves with NPH-50 in our hands have not been nearly as good as those obtained with NP-50 insulin. We believe that the NPH-50 modification is not a sufficient improvement over globin insulin, which is now available, to make it advisable that anyone suggest its adoption for widespread use. The NPH-50 insulin, like globin insulin and the 2:1 mixture, controls 75 or 80 per cent of cases of mild diabetes rather well, but in moderate or severe diabetes it has not given sufficiently rapid effect and therefore does not sufficiently control the blood sugar rise after breakfast. It tends to cause low afternoon blood sugar levels. The NPH-50 modification has not proved itself superior. I believe that we should be greatly encouraged and that an insulin similar in some respects to NPH-50 insulin but better in several respects can and should be devised.

Dr. Henry T. Ricketts, Chicago: One of the prime requirements of an intermediate insulin is that it have an effect lasting twenty-four hours, preferably a few hours longer, in all patients. Globin insulin too often fails to meet these requirements. The mixing of regular or crystalline and protamine zinc insulin, when made by patients in the syringe, is technically too difficult for the unintelligent and involves some question of accuracy, not to mention convenience. NP-50 insulin, which closely resembles the 2:1 mixture in its effect on the blood sugar, has proved to be too unstable to justify its being placed on the market. NPH-50 insulin would seem to lack the drawbacks of the other forms and to retain the advantages they have offered. Our experience with it is in substantial agreement with that of Dr. White. We have found, in a series of ambulant patients which did not include children but did include a number of severely diabetic young adults, that this form of insulin controlled glycosuria fully as well as a 2:1 mixture or as NP-50 insulin in 22 of 23 cases. Indeed, it was difficult to see that there was any real difference between any two of these preparations with respect to dosage requirements, time-activity characteristics or the frequency, timing or severity of reactions. In 1 case it was necessary to add 10 units of crystalline to 60 units of NPH-50 insulin to control the blood sugar level after breakfast—a procedure which worked out well. In two other cases, small amounts of supplementary crystalline insulin were given separately, with good results. In addition to meeting the minimum requirement of a full twenty-four hour effect, modified protamine insulin appears thus far to have enough carry-over that the admixture of small amounts of crystalline insulin, necessary in some cases of severe disease to prevent hyperglycemia after breakfast or after lunch, hastens the onset of activity without reducing the duration of activity below twenty-four hours. That is an important feature. It should be stated, however, that not enough data are available to establish this point with certainty.

NPH-50 is still not an ideal insulin, but the day of the ideal insulin is not at hand. Meanwhile, there is little point in continuing a preparation—protamine zinc insulin—which has to be hand mixed with another for the single dose management of persons with severe diabetes, if a more effective manufactured preparation, satisfactory for the vast majority of patients and capable of further modification when necessary, can be made available.

Dr. Priscilla White, Boston: I hope that Dr. MacBryde or others will discover an even better insulin than NPH-50, but I agree with Dr. Ricketts that at the present time it would be desirable for this modified protamine insulin to be put on the market.

THE USE OF ANTIBIOTICS

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Until recently the problem of the proper antibiotics to use in the treatment of infectious diseases was comparatively simple. The physician who was faced with an infectious disease in which antibiotic systemic therapy was indicated administered either penicillin or streptomycin or both, and that was that. During the past year this relatively happy state of affairs has been rudely interrupted by the appearance of aureomycin and chloramphenicol (chloromycetin®), two antibiotics which possess wide and effective ranges of action. The result is that careful attention must now be given to the choice of the antibiotic to be used in the treatment of any individual patient, and in certain instances of disease the problem becomes one of choosing the most effective combination of the several antibiotics.

It will be our purpose in this report to attempt to assess current information concerning the choice of antibiotics, to propose adequate dosage schedules and to discuss the toxic reactions which may occur when these agents are used in the treatment of infectious diseases. It should be obvious that certain of our recommendations will necessarily be tentative, because information concerning the comparative values of aureomycin and chloramphenicol when these are used therapeutically against some infectious diseases is scanty. It should also be borne in mind that, except in those cases in which combined therapy is indicated, no mention will be made of the comparative value of the sulfonamide drugs.

The physician who is confronted with an infectious disease which will respond to several antibiotic agents must consider the following questions in selecting the drug with which to treat the disease:

Which antibiotic will be most effective?

What is the relative toxicity of the agent in the dosage prescribed?

With what ease can the compound be given?

What will the cost of the antibiotic, or the auxiliary costs of its administration, be to the patient?

All are important, but, in these days when the costs of medical care are at a peak, the last two questions should enter into each physician's calculations. If two agents are equally effective against a given infectious process, then the one which will bring about a betterment at the lowest cost to the patient should be used. This does not necessarily mean the cheaper antibiotic but rather the antibiotic which can be given with least auxiliary charges, such as those of hospitalization and frequent visits of patient or physician. Thus a more expensive antibiotic which can be given safely and effectively by mouth in the home might be the choice rather than a cheaper one that requires hospitalization or the physician's frequent attendance for its administration. There are, however, certain exceptions to these generalizations. If a life is at stake, neither the patient nor the physician should count the cost, and every step should be taken which will bring about recovery from the infection.

Tables 1, 2 and 3 present in general terms the antibiotics of choice for the treatment of infections of average severity. As will be noted, when two antibiotics are of equal effectiveness, they are so listed. If the infection is severe, then combinations of equally effective, or primarily and secondarily effective, antibiotics should be used. In our opinion, subacute bacterial endocarditis presents a typical example of an instance in which more than one antibiotic might be given. If the infecting organism is a gram-positive coccus, we believe that an adequate combination of penicillin, streptomycin and aureomycin should be used; if a gram-negative organism is at fault, a proper combination of streptomycin, aureomycin and chloramphenicol should be administered to the patient. In severe influenzal meningitis or in gas gangrene, the use of one of the diazines is always to be recommended as an adjunct to antibiotic therapy. In other infections the diazines may be used in conjunction with the chosen antibiotic agent if in the physician's opinion it will hasten the patient's recovery. It is well for the physician to remember that sulfonamide drugs, penicillin, streptomycin, aureomycin and chloramphenicol all attack and damage different systems in susceptible infecting micro-organisms. The intelligent exploitation of this knowledge will result in prompt and satisfying cures of infectious diseases.

TABLE 1.—*Present Day Usage of Antibiotics in Infections*

	Type of Infection or Disease	Penicillin G	Streptomycin	Aureomycin	Chloramphenicol
I.	Group A beta hemolytic streptococcic infections	I	III	II	..
II.	Alpha hemolytic streptococcic infections	I	II	II	..
III.	Streptococcus faecalis infections (group D)	II	..	I	..
IV.	Pneumococcic infections	I	III	II	..
V.	Meningococcic infections	I	..	U	U
VI.	Gonococcic infections	I	II	III	III
VII.	Staphylococcic infections				
	A. Mild or moderate	I	..	II	..
	B. Severe	I*	..	II*	..
VIII.	Acute brucellosis	..	..	I	I
IX.	Whooping cough	..	?	?	U
X.	Tularemia	..	II	I	U
XI.	Typhoid	..	..	II	I
XII.	Influenzal meningitis				
	A. Moderate	..	..	I	U
	B. Severe	..	II+S.D.	I+S.D.	U

Key: I indicates first choice; II, second choice; III, third choice. A blank signifies that the drug is of little value. U means that the effect is unknown. S.D. stands for sulfadiazine.
* Combined therapy is used.

In table 4 the dosage schedules of aureomycin and chloramphenicol currently used for children are outlined. Again we must state that these are tentative and will probably be revised as more experience is at hand. It has not been considered necessary to discuss the dosage of penicillin, streptomycin or dihydrostreptomycin with regard to children at this time. Directions concerning the use of these antibiotics are contained in "New and Nonofficial Remedies,"[1] to which the physician is referred for such information. Also, it can be said that valuable instructions for using these antibiotics are contained in the package inserts of brands which have been accepted by the Council of Pharmacy and Chemistry of the American Medical Association.

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Read before the Section on Pediatrics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

These clinical investigations were supported in part by grants from: Abbott Laboratories; Lederle Laboratories Division, American Cyanamid Company; Parke, Davis and Company, Upjohn Company.

[1] New and Nonofficial Remedies, *Philadelphia, J. B. I* pany, 1949.

When aureomycin or chloramphenicol is being used against moderate or severe infections, it is well to start with "priming" doses of the antibiotic of choice. In this way, an effective blood concentration of the antibiotic will be established promptly. As will be noted in table 4, for moderately severe infections the initial dose is divided into three "priming" doses, which are *given by mouth at hourly intervals.* The total daily maintenance dose is calculated on the basis of the weight of the patient and is divided into six equal parts (or as nearly as is practical); a part (dose) is administered at each four hour interval until the infection is controlled. In patients who are severely ill, and for whose treatment aureomycin has been chosen, the initial "priming" doses may be given by the oral and/or intravenous route. Combined oral and intravenous therapy is generally needed *only in instances of the most severe disease.* At the time of this writing, preparations of aureomycin suitable for intravenous use have not been approved for commercial distribution by the Food and Drug Administration. It is believed, however, that such dosage forms will be generally available by the end of this year. If the "priming" doses are being given by mouth, the indicated total initial dose of the antibiotic should be divided into three parts and given at hourly intervals, while, if the intravenous route is used, the total "priming" dose should be administered at one time. Then, maintenance doses of aureomycin should be given as outlined in table 4 until the symptoms and signs of the disease are controlled and the temperature has been normal for at least forty-eight hours. (For infants the aureomycin may be dissolved in the formula.) In the treatment of rickettsial infections it is generally safe to withdraw the antibiotic at this point. In the treatment of bacterial and viral infections the dose may be halved at this point and its use continued for five to seven days, except with those patients initially suffering from bacteremia or meningitis. With these the antibiotic should be administered at the higher dosage level until in the physician's opinion the patients are well.

TABLE 2.—*Present Day Usage of Antibiotics in Infections*

Type of Infection or Disease	Penicillin G	Streptomycin	Aureomycin	Chloramphenicol
I. Urinary tract infections				
A. Escherichia coli	..	II	I	I
B. Aerobacter aerogenes	..	II	I	I
C. Proteus vulgaris	..	II	..	I
D. Pseudomonas aeruginosa	..	I	..	II
E. Streptococcus faecalis	II	..	I	..
II. Tuberculosis	..	I	U	U
III. Chancroid	..	I	I	..
IV. Friedländer's bacillus infections	..	I	U	U
V. Salmonella infections (food poisoning)	..	..	?	?
VI. Bacillary dysentery	..	..	U	U
VII. Plague	..	I	U	U
VIII. Subacute bacterial endocarditis				
A. Alpha streptococcus	I	..	II	..
B. Str. faecalis (group D)	I*	I*	I*	..
C. Staphylococcic	I*	..	II*	..
D. Gram-negative bacillary	..	I*	I*	I*
IX. Trachoma	I	U	U	U
X. Surgical conditions of the bowel (preoperative and postoperative)	..	I-SS	U	U
XI. Pulmonary conditions (preoperative and postoperative)	I	I	U	U

Key: I indicates first choice; II, second choice; III, third choice. A blank signifies that the drug is of little value. U means that the effect is unknown. SS stands for succinylsulfathiazole.

* Combined therapy is used.

As chloramphenicol may be given only by mouth, the instructions contained in table 4 should be followed, and, as far as the maintenance dose is concerned, the instructions just laid down for aureomycin will suffice. Dosage schedules for adult patients are listed in table 5. If nausea or vomiting appears, it is well to give an adequate amount of an antacid with each dose of the antibiotic. In a certain number of instances this adjunct therapy will relieve the nausea and prevent vomiting. It has been noted that the severe vomiting which may occur when aureomycin is being taken by mouth can *frequently be eliminated if a shift to intravenous therapy* is made. Finally, it has been noted with certain patients to whom apparently adequate doses of aureomycin *have been administered by mouth without* achieving the desired effect, a shift to intravenous injection of this antibiotic will bring about a prompt betterment of the patient's condition.

TABLE 3.—*Present Day Usage of Antibiotics in Infections*

Type of Infection or Disease	Penicillin G	Streptomycin	Aureomycin	Chloramphenicol
I. Rickettsial diseases	..	..	I	I
II. Primary atypical pneumonia	..	..	I	U
III. Psittacosis	II	..	I	U
IV. Lymphogranuloma venereum	II	..	I	U
V. Anthrax	I+S.D.	..	U	U
VI. Syphilis	I	..	II	..
VII. Yaws	I	..	U	U
VIII. Granuloma inguinale	..	I	I	U
IX. Rat bite fever				
A. Spirillum minus	II	..	I	U
B. Streptobacillus moniliformis	..	I	U	U
X. Gas gangrene	I+S.D.	..	U	U
XI. Influenza	..	..	..	..
XII. Common cold	..	..	..	..
XIII. Rheumatic fever (prophylaxis only)	I (or S.D.)	..	..	..

Key: I indicates first choice; II, second choice; III, third choice. A blank signifies that the antibiotic is of little value. U means that the effect is unknown. S.D. stands for sulfadiazine.

TABLE 4.—*Dosage Schedules of Aureomycin and Chloramphenicol for Children*

Severity of Illness	Aureomycin				Chloramphenicol	
	Initial Priming Dose, Mg. per Kg. of Body Weight		Total Daily Maintenance Dose, Mg. per Kg. of Body Weight		Initial Priming Dose, Mg. per Kg. of Body Weight	Total Daily Maintenance Dose, Mg. per Kg. of Body Weight
Moderate	Oral* 10		Oral† 25-50		Oral* 60	Oral† 30-60
Severe	Oral* 20	Intravenous‡ 5	Oral† 100	Intravenous§ 15	Oral 60	Oral 60-120

* The oral priming dose should be split into three parts and given at hourly intervals for three doses.

† The oral maintenance dose should be split into six parts and a part *given every four hours.*

‡ The intravenous priming dose should be given in one dose.

§ The intravenous maintenance dose should be split into three parts and a part given every eight hours.

TOXIC REACTIONS

The toxic reactions occurring in the course of the action of penicillin or streptomycin are well known and will not be discussed. While dihydrostreptomycin produces a smaller percentage of toxic reactions than does streptomycin, it must be borne in mind that it can produce the serious reactions which have been noted in the course of streptomycin therapy. To date, and this may change as time elapses, the toxic reactions reported to be produced by aureomycin or chloramphenicol have been nausea, vomiting and looseness of the bowels. In this respect, aureomycin administered by the oral route appears to be a greater offender than chloramphenicol. It would appear reasonable to administer vitamins, in amounts adequate to supply the total daily requirements of the accessory food factors, to patients receiving either aureomycin or chloramphenicol for extended periods. This suggestion is based on the possibility that the disturbance of intestinal function often noted in these patients may produce subclinical vitamin deficiencies. It has also been noted in patients who are receiving aureomycin that an excoriation may occur around the anus as a result of diarrhea. Also, a few patients who receive aureomycin in heavy dosage may show euphoria. It should be said that all of the toxic reactions noted so far in the course of aureomycin or chloramphenicol therapy are more frequent in ambulatory than in bedded patients.

Table 5.—*Dosage Schedules of Aureomycin and Chloramphenicol for Adults*

	Aureomycin				Chloramphenicol	
Severity of Illness	Initial Priming Dose, Mg. per Kg. of Body Weight		Total Daily Maintenance Dose, Mg. per Kg. of Body Weight		Initial Priming Dose, Mg. per Kg. of Body Weight	Total Daily Maintenance Dose, Mg. per Kg. of Body Weight
	Oral*		Oral†		Oral*	Oral†
Moderate......	10		30		60	30-60
	Oral*	Intravenous‡	Oral†	Intravenous§	Oral	Oral
Severe.........	15	5	50-60	15	60	60-120

* The oral priming dose should be split into three parts and given at hourly intervals for three doses.

† The oral maintenance dose should be split into six parts and a part given every four hours.

‡ The intravenous priming dose should be given in one dose.

§ The intravenous maintenance dose should be split into three parts and a part given every eight hours.

CONCLUSION

With multiple antibiotics at his disposal, the physician must choose carefully and wisely from among them, in order that his patient may receive the most effective and economical type of antibiotic therapy.

ABSTRACT OF DISCUSSION

Dr. Vernon Knight, New York: An important aspect of therapy in infectious disease, as Dr. Long has mentioned, is that of the simultaneous use of antimicrobial agents. It has been possible in some instances, and in particular against group D streptococci from patients in New York Hospital with subacute bacterial endocarditis, to demonstrate an additive or synergistic effect with penicillin and streptomycin in vitro. Moreover, the combined treatment of these infections with these agents has resulted in an eminently more satisfactory proportion of recoveries than formerly, when these agents were employed singly. As Dr. Long mentioned, one of the most surprising occurrences in the use of chloramphenicol and aureomycin has been their lack of serious toxicity. In an investigation in Mexico in which more than 50 patients with typhoid were treated, oral doses of aureomycin as high as 18 to 24 Gm. daily were administered to adults with no more than moderately severe vomiting or diarrhea as evidences of toxicity. In children doses of 400 to 500 mg. per kilogram of body weight per day were employed without serious toxicity. Chloramphenicol has been administered regularly for several days in doses of 100 mg. per kilogram per day without serious toxicity. Dr. Long has mentioned the intravenous use of aureomycin. It appears to be a practical mode of administration, and my associates and I have used it successfully in the dosages he has recommended in a variety of infections, including murine typhus, peritonitis, puerperal sepsis and staphylococcic infections. After the administration of aureomycin by this route to 10 patients with measles, no consistent pattern of recovery was observed and it was believed that significant beneficial effect had not been exerted. Of particular interest is the use of aureomycin in pertussis. In the past season this drug has been used in the treatment of 6 infants with this disease in a joint project with the U. S. Army Dependents Hospital at Fort Hamilton, N. Y. Oral dosages as high as 333 mg. per kilogram per day were employed for periods up to ten days. Drs. Miller and Ross reported that all these patients displayed improvement within three to four days after initiation of therapy, with disappearance of cyanosis and vomiting, and that by the seventh to tenth day all these patients were no longer whooping and were greatly improved. A favorable report of the use of aureomycin in 20 other patients with pertussis appeared in *Public Health Reports* for May 13, 1949.

Dr. Robert B. Lawson, Winston-Salem, N. C.: Dr. Long has stressed the value of combined therapy for serious infections in which there may be bacterial resistance to one agent alone. This important concept suggests that these infections should be hit hard at once with a combination of therapeutic agents rather than using the agents in succession, as is so often done in practice. It is important to bring out, however, that this type of therapy demands a painstaking search for the specific offending organism and in no way justifies "shotgun" treatment without an etiologic diagnosis. A good example is the physician's approach to meningitis: the excellent results of modern treatment for this disease rest on an accurate and early diagnosis of the specific organism made by good laboratory technic. It is only when one has this information that combined therapy can be used intelligently and effectively. Along with the knowledge of what these antibiotics will do, one must keep in mind what they will not do, in order to avoid needless expense to the patient and disappointment to the physician. The vast majority of infections in children are due to virus and other agents that are not affected by the antibiotics rather than to bacteria known to be susceptible. For this reason, the physician must continually keep in mind the need for differentiating those children who require specific treatment and will respond quickly from the larger number who have self-limited virus infections of an ill-defined nature, in whom specific treatment is neither necessary nor successful. I would like to mention the problem that Dr. Long touched on, namely, the appearance of the "serum sickness" type of reaction following the administration of penicillin. This is of particular importance to pediatric groups, because penicillin has frequently been given for pharyngitis; the later appearance of joint pain and swelling has been confusing in the differential diagnosis of rheumatic fever and has caused needless treatment of children for rheumatic fever. What are the comparative blood levels when aureomycin is given in a milk formula to children?

Dr. Perrin H. Long, Baltimore: In response to Dr. Lawson's question, my associates and I have performed estimations of the concentration of aureomycin in the blood of infants who were not ill and who were getting aureomycin in their formulas. We have not noted any great differences in the concentration of aureomycin in their blood serum from that in little children who received aureomycin in capsules. We believe that it has been an inaccurate procedure, and one which has practically not revealed anything more than whether or not there was aureomycin in the serum. For that reason, I strongly advise the physician prescribing aureomycin not to worry about cluttering up the hospital laboratory with tests for the concentration of aureomycin because, even with the most careful technics it is not yet known how great is the error in these estimates. I do not recommend determining aureomycin blood levels as a routine procedure. I believe that if one sees the patient a couple of times a day and watches his temperature chart and his clinical condition, one knows whether the patient has had enough aureomycin; if his temperature is not down to normal in forty-eight hours and you are treating him for something that you know can be cured by the drug, then give the patient a little more aureomycin.

PHYSICAL MEDICINE IN PERIPHERAL VASCULAR DISEASES

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In a recent book on the diagnosis and treatment of peripheral vascular diseases, an outline classification of diseases and abnormalities of the blood and lymph vessels of the extremities occupies seven and one-half pages.[1] From the point of view of prevalence, by far the great majority of these can be grouped under the headings, "Arteriosclerosis Obliterans," "Thromboangiitis Obliterans," "Raynaud's Syndrome," "Varicose Veins" and "Thrombophlebitis."

DIAGNOSIS

A patient may complain of discomfort or of pain either on exertion or at rest, of coldness in the extremities and of limitation in his ability to walk. Arteriosclerotic changes are most apt to occur in the older person, particularly the one with diabetes. The initial symptoms in thromboangiitis obliterans usually show themselves before the age of 45 and only in men (with rare exceptions). Raynaud's syndrome is observed most frequently in women. Enlargement, inflammation and thrombosis of veins may involve various etiologic factors.

Objective observations include a change in color, particularly on elevation or dependence of the involved extremity, diminished skin temperature and absence of pulsating arteries. The observation of a warm foot, normal in appearance, which does not pale quickly on elevation or become turgid on dependence, with pulsating blood vessels should cause the examiner to seek some other explanation for complaints of pain in the foot and leg. When pulsating blood vessels are present, particularly in the lower extremities, the ability to detect them is enhanced by a proper technic which permits relative relaxation of the examiner's fingers.

Most cases of moderately advanced peripheral vascular disease can be detected by the history and physical criteria as described. In some instances it may be difficult to make a diagnosis without the further aid of some special apparatus. These include the oscillometer, which gives evidence of the gross pulsations of an extremity, and the skin surface thermometer, which conveys more exact knowledge than the examiner's hand. The skin thermometer (usually electric) reveals considerable information concerning the status of the circulation especially when employed in conjunction with the application of heat to a remote extremity. Normally, vasodilation takes place in the lower extremities in response to immersion of the forearms in warm water.[2] This rise will occur usually within fifteen to twenty minutes and to the level of that shown by the skin of the torso and forehead. A slow rise and to a temperature height below this level or a complete absence of rise indicates peripheral vascular abnormality. *The mechanism by which hot baths affect the* surface temperature of the toes has been studied by Pickering.[3] He showed that the warm blood returning from the upper extremity affected the heat-regulating center in the brain and that secondary nervous impulses to the lower extremities resulted in vasodilatation. Such nervous impulses are carried by the sympathetic nervous system. The removal of the sympathetic vasoconstrictor influence causes an elevation of the temperature of the skin surface of the extremities when vasospasm exists, but not when organic disorder is the cause of the vascular difficulty.[4] Associates and I have shown that the changes noted in the skin surface temperature of the toes following hot forearm baths were *not accompanied by corresponding* changes in the calf muscles.[5]

Other special technics for the detection of peripheral vascular disease include use of the plethysmograph,[6] arteriograph [7] and phlebograph,[8] capillary studies,[9] production of sweating,[10] production of histamine flares,[11] tracing of radioactive isotopes [12] and use of the ergometer.[13]

TREATMENT

All measures to relieve the subject with peripheral vascular diseases are intended to restore the normal balance between metabolic needs and supply of the tissues. These efforts are made to augment the blood supply by vasodilation and by increasing the collateral circulation except in extreme instances. Such an extreme instance occurs when there is no possibility of influencing blood flow, as in thrombosis of the common iliac arteries. Here the reduction of the metabolism of the structures of the lower extremity can be accomplished by the local application of cold. This measure will cause a diminution of the severe pain of these patients.

Heat.—A simple measure to increase circulation, when this is possible, is the use of heat. Heat also causes an increase in the metabolic needs of the tissues to which it is applied. For these reasons, when heat is applied directly to involved extremities it is administered in small doses. When heat is so applied by means of hot water bags, lamps and high frequency currents there is danger of causing thermal damage to tissues in which there is interference with the blood supply. An increase in pain, or the development of an increase in cyanosis, calls for the cessation of the treatment or a reduction in the quantity of energy used. The difficulty may be due to an increase in local tissue pressures, to increased local metabolism without compensating vascular supply or to direct tissue death, inasmuch as poor circulation cannot remove heat as

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Read before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

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rapidly as normal circulation. The danger of causing thermal damage is further enhanced if thermal sensation is lost in the treated part. A good instrument for mild and prolonged local heating is the thermostatically controlled foot cradle, the air temperature of which is usually maintained between 88 and 95 F.[14] When more vigorous methods of heating are employed, as with large lamps and diathermy machines, it is safest to apply the heat to some remote part of the body, such as the arm or the torso. Electrically heated sheets and blankets now permit a simple technic for the application of mild and prolonged heat to the entire body.

Activity and Rest.—As with heat, exercise can increase both the circulation and the metabolic needs. In cases in which the local circulation is greatly compromised, as indicated by a discoloration of sudden onset or one that rapidly increases, by the presence of gangrene or ulceration or by severe pain during rest, exercise is contraindicated. According to Wright, the extremities should be held about 3 to 6 inches (0.64 to 1.27 cm.) below the position of the heart, because this is the plane at which to obtain the best blood supply as shown by the filling of the superficial veins—indicated by their slight projection above the skin level.[1]

In the absence of gangrene or extensive ulceration, the patient should be encouraged to walk until pain develops. After a rest, he can resume walking. If the involvement is severe, the Buerger type of exercise can be applied while the patient lies in bed. With the patient lying in the supine position, the extremity is elevated 60 to 90 degrees above the horizontal for the minimum time required to produce ischemia (thirty seconds to three minutes). It is then allowed to hang down over the end of the bed until one minute after the appearance of the reactionary rubor (two to five minutes). The leg is then held in the horizontal position for three to five minutes. This cycle is repeated for one-half hour to one hour three or four times a day.[15]

Sanders devised an apparatus which automatically and continuously rocks the bed through an arc of 60 degrees at a slow, regular rate. Patients soon learn to lie and sleep on this device without experiencing any discomfort. It is particularly valuable for those patients in whom the effort required for the performance of the Buerger exercises is too great. In many patients it relieves pain. It is said to retard the decalcification which occurs during prolonged periods of rest in bed. It may be used either continuously or for intermittent periods during the day, by itself or in conjunction with other measures.[16]

Other Vasodilating Technic.—Histamine and acetyl-beta-methylcholine chloride applied by iontophoresis will cause cutaneous vasodilatation and can therefore be employed for the treatment of peripheral vascular diseases. Both these drugs are useful for the care of indolent ulcers. Acetyl-beta-methylcholine chloride iontophoresis is particularly important in the present limited therapeutic armamentarium for use against scleroderma. It can cause symptomatic improvement. Asbestos paper or gauze soaked with histamine acid phosphate (1:1,000) or acetyl-beta-methylcholine chloride (0.1 to 0.5 per cent) is placed on the region to be treated and is connected by suitable electrodes to the positive pole of a unidirectional source of current. The negative pole is connected to a large dispersive pad placed on the back, or elsewhere on the body. Ointments may be used instead of solutions. Details of technic must be followed carefully in order to avoid burns, which can be exceedingly resistant to healing.[17]

Carbon dioxide baths will also cause vasodilatation. It is claimed that carbon dioxide and oxygen are absorbed by the skin. Benatt has stated that carbon-dioxide-containing baths lead to hyperemia and an increase of the velocity of blood flow of the subcapillary venous plexuses.[18]

Recently, drugs have been introduced which exert adrenolytic and sympatholytic actions. Their vasodilator effects can be readily established by plethysmographic and skin temperature observations. They include tetraethylammonium chloride,[19] dibenamine® (N,N-dibenzyl-beta-chloroethylamine)[20] and priscoline® (2-benzyl-4,5-imidazoline).[21] It has been known for many years that other substances cause vasodilation. These include alcohol [22] and acetylsalicylic acid.[23] Among the peripheral vasoconstrictors are tobacco (to which those suffering from thromboangiitis obliterans are particularly allergic) [24] and caffeine.[23]

Sympathectomy is advocated by some surgeons if a preliminary paravertebral block is followed by evidence of increased cutaneous circulation in the foot.[25] Temperature studies failed to reveal any increased blood flow to the muscles of the leg after sympathetic interruption, even though the circulation in the skin was augmented.[26] Objective proof to the contrary is lacking. From the clinical point of view there exists a difference of opinion. Some consider that it is of value when cutaneous circulation is deficient—particularly in the presence of skin ulcers—but it does not help the intermittent claudication. Others consider it a good procedure for both conditions.

Mechanical apparatus designed to produce an increase in peripheral circulation, such as that for alternating negative and positive pressures [28] and for intermittent venous occlusion,[29] are now but little used.

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Clinically, the whirlpool bath has shown itself to be of value, even though objective evidence of increased circulation has not been observed following its application.[30] We have observed the healing of persistent, indolent ulcers occurring on a thrombophlebitic or arteriosclerotic basis (with or without diabetes) following the use of the whirlpool bath medicated with sulfathiazole and with oxygen. The apparatus required for the production of this bath can be simple and relatively inexpensive.[17]

PROPHYLACTIC MEASURES

As Linton has pointed out, peripheral arteriosclerosis is increasing in frequency because of the advancing age of the general population. He therefore has considered it of importance that "There appears to be definite evidence not only that the extremity derives an immediate benefit from this form of treatment (sympathectomy) but also that it is the best protection that can be given to prevent serious vascular disorders with gangrene in old age. In other words, it appears at present writing that the symptoms and signs of peripheral arteriosclerosis may be reversible if sympathectomy is performed early in the course of the disease and provided the sympathetic neurectomy is sufficiently extensive to prevent regeneration." [31]

Inasmuch as there are undoubtedly many elderly persons with mild symptoms of failing peripheral circulation who would not submit to sympathectomy, it might be worth while to consider other nonsurgical preventive measures. Fundamentally, the problem involves the entire subject of the aging human organism. From this point of view, other considerations, such as dietary ones, may be important—particularly in the presence of a high cholesterol blood level. The elderly person might be advised to avoid use of tobacco and caffeine and encouraged to take a drink of wine or whisky. Exercise could be prescribed within the limits of his cardiovascular possibilities—exercise which would be neither vigorous nor prolonged. Maintenance of body temperature with a minimum of metabolic effort could be accomplished by warm climatic surroundings and by warm clothing when the environment was inclement. At night, the use of mild warmth secured from thermostatically controlled sheets or blankets might well encourage the shift of blood to the peripheral blood vessels and so be of value not only to the elderly person's legs, but also to his joints if they are arthritic, to his blood pressure if it is high, and to his insomnia if it is present.

These prophylactic measures might also be of service to the many persons, not necessarily old, who suffer from what might be called subclinical peripheral vascular disease. These are persons whose hands and feet become cold when their environmental temperature drops, who then feel generally uncomfortable and come to hug the fire.

It has been observed that the application of cold causes a reduction in the temperature not only of the skin but also of the deeper structures.[32] It has also been noted that cold applied to one area of the body (as to the forearm) produces a lowering of temperatures in remote regions (as the skin of the foot).[33] The practical application of this objective evidence is to emphasize that those who are required to work in low temperatures should be warmly clothed all over.

CONCLUSION

Physical measures play an important part both in the diagnosis and in the treatment of peripheral vascular diseases. In a large percentage of cases relatively simple procedures, such as those commonly employed in clinical inspection and palpation, prove adequate for diagnosis and uncomplicated devices, such as hot water baths, heating pads, electric blankets, lamps, whirlpool baths, exercise and hygienic measures, are adequate for treatment purposes. Some persons who have peripheral vascular disease require the special disciplines which have been developed for the diagnosis and treatment of this condition. These measures may be of service for the prophylactic care and for the comfort of the elderly person and for the subject who shows subclinical signs of inadequate peripheral circulation.

471 Park Avenue.

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INFECTION OF THE HIP BY BRUCELLA SUIS

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Infection of the human being by Brucella organisms is common in the United States. According to a recent editorial[1] in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, approximately 4,000 cases of human brucellosis are reported annually to the state departments of health, but it is estimated that the truer figure would run to at least 30,000 to 40,000 actual cases annually. It has been known for years that localization is a characteristic of Brucella infection. Such local lesions have been observed in guinea pigs, especially in those inoculated with Brucella suis, and Huddleson[2] has observed suppurative arthritis, osteomyelitis, spondylitis, meningitis, orchitis and abscesses of the spleen, liver, lymph nodes and other soft tissues. Destructive bone and joint lesions have also been noted in cattle, hogs and horses but are considered relatively rare in man. We propose herein to report a case of Brucella suis infection of the hip joint, diagnosed by clinical and bacteriologic means and successfully treated.

A few words about the history of brucellosis are in order. In the British Army Medical Department's statistical report of 1861, published in 1863, Marston[3] first differentiated Malta fever from the other Mediterranean fevers. The causative organism of Malta fever

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Read before the Section on Orthopedic Surgery at the Ninety-Eighth *Annual Session of the American Medical Association*, Atlantic City, N. J., June 10, 1949.

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was discovered by Bruce[4] in 1887. He obtained the specific organism at necropsy from the spleens of human patients who had died of Malta fever. In 1897 Bang[5] in Denmark discovered the organism which causes abortive fever in cows, but it was not until 1918 that Evans[6] demonstrated the similarity between the organism of Bang's disease and that of Malta fever. Traum[7] in the United States isolated the organism Br. suis in 1914 from the fetuses expelled prematurely from sows. Bang's disease, Malta fever, undulant fever and brucellosis are considered clinically synonymous, preference in the past several years having been placed on the term brucellosis.

The clinical picture of brucellosis is generally well known. Specific bone and joint complications, however, are less generally observed, partly because of their rarity and partly because of the difficulty in making a diagnosis. As mentioned previously, brucellosis is known to localize in certain of the tissues. A generalized form of polyarthritis was carefully described in 1930 by Hardy and associates.[8] In an article published on a study of Brucella infection in Iowa, they noticed that 32 per cent of 375 patients had arthralgia. Less than 2 per cent, however, had actual inflammation of the joints. A similar study by Swartout[9] in 1937 revealed that of 271 patients observed in Southern California 37 per cent had joint pains. Incidentally, 44 per cent had backache and 39 per cent had pain in the back of the neck. In 1939 Hench and associates,[10] in the "Fifth Rheumatism Review," stressed that one should constantly remember that muscle and joint pains and even frank arthritis may be dominant features of brucellosis. They also stated, as we shall discuss later, that cultures of suppurative lesions are likely to be negative unless the peculiar cultural requirements for Brucella are anticipated.

Goldfain[11] in 1938 attempted to prove relationship between chronic, apparently rheumatoid, arthritis and brucellosis. He studied 50 patients who had rheumatic disease by means of agglutination, opsonocytophagic and cutaneous tests. Thirty-one patients were said to have active brucellosis and 5 were said to have showed acquired immunity. In 1943 Goldfain[12] reported 18 cases of ankylosing spondylitis, of which 5 were attributed to chronic brucellosis on the basis of positive cutaneous, opsonin and agglutination reactions. In 1941 Green and Freyberg[13] questioned Goldfain's observations. They studied 50 patients at the University Hospital, Ann Arbor, Mich. Twenty-five of these patients had typical rheumatoid arthritides. Brucellosis did not exist in any of the first group. In the second group there were 3 certain cases and 6 probable cases of brucellosis. Their conclusions were that brucellosis seldom, if ever, causes chronic nonpurulent inflammation of the joints. In 1937 Hardy[14] stated that in the study of the Iowa cases of brucellosis, arthritis was rare in the milder bovine infections but was rather common in the porcine strains. He stated that one third of the cases in Iowa were of the porcine, or Br. suis, variety. As previously stated, arthralgia was noted in 36 per cent of these. It was a prominent symptom, however, in only 7 per cent. Usually, multiple joints were involved, pain shifting from one joint to the other. The knees, elbows, ankles, shoulder, wrists, fingers and toes were involved in that order, and Hardy did not mention involvement of the hips. Complete subsidence of the arthritic manifestations without a residual was the rule. He stated that eroding suppurative arthritis was encountered occasionally, but only in the spinal and wrist joints in his experience.

Hydrarthrosis as a complication of brucellosis was first reported in 1928 by Baker.[15] He described a case showing all the characteristics of hydrarthrosis, in which the patient suffered from infection by Brucella melitensis. The knees swelled at seven day intervals. The fluid was withdrawn, and microscopic examination disclosed many small gram-negative diplococci on the direct smear. These grew luxuriantly on a beef infusion agar medium of a p_H of 7.4 and proved to be Brucella abortus. In 1936 Sharpe[16] reported a second case of intermittent hydrarthrosis in a patient suffering from undulant fever, though Sharpe did not succeed in culturing Brucella organisms from the synovial fluid, the blood or the urine. The agglutination was positive in a dilution of 1:400 to 1:500.

In 1948 Steinberg[17] reported a case of localized sacroiliac arthritis in a Doctor of Veterinary Medicine, aged 30 years. Involvement was of the left sacroiliac joint. The patient's agglutination titer was from 1:320 to 1:1,280. Spink[18] reported a similar case of sacroiliac arthritis due to Brucella infection.

The first proved case of Brucella osteomyelitis was reported by Kulowski and Vinke[19] from the Steindler Clinic in 1932. The patient suffered from suppurative spondylitis, and Brucella organisms were cultured from the lesions. In 1940 Steindler[20] surveyed the literature and found that to 1939, 57 cases of osteomyelitis of the spinal column and intervertebral disks had been reported. To these 57 cases he added 4 more. Osteomyelitis of the long bones has also been recognized. Involvement of the long bones by Brucella organisms is summarized by Lowe and Lipscomb,[21] who reported 2 additional cases of proved Brucella osteomyelitis.

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SEPTIC, MONARTICULAR ARTHRITIS

In 1932 a thesis was published which had been written by Strachan[22] in 1911 and submitted to the University of Glasgow, Scotland. In this thesis was reported 1 case of psoas abscess probably due to caries of the lumbar vertebrae. The patient was suffering from brucellosis. In this same thesis Strachan reported joint effusion in 15.3 per cent of brucellosis cases reviewed and cold abscesses in 1.86 per cent. We find here mentioned for the first time involvement of the hip joint by brucellosis. Strachan reported a case of hip joint disease requiring treatment in bed with extension. He also stated that a Dr. A. Garrow[23] of Steytlerville, Cape Colony, recorded in 1910 a case of undulant fever followed by hip joint disease.

O'Donoghue[24] published in 1933 an exceedingly significant case report of a girl aged 12 years, whom he saw while she was acutely ill and while she was suffering from excruciating pain in the region of the right hip. The agglutination test for Brucella organisms was positive in a dilution of 1:160. Roentgenograms showed slight cloudiness in the right hip joint with probable bulging of the capsule. Radical drainage was done and a large amount of pus was evacuated. Cultures of this pus showed Br. melitensis on the ninth day. Solid bony ankylosis ensued after several months of plaster immobilization. This is the first reported case of septic monarticular arthritis proved by the isolation of the organisms (except for the "suppurative spondylitis" previously reported by Kulowski and Vinke.[19] This is not actually a monarticular arthritis, but disk and vertebral involvement). O'Donoghue went on to state his opinion that in the Middle West septic joint involvement may often be due to Malta fever and that joint infections from this cause are probably commoner than has been suspected, because the differential diagnosis between septic monarticular arthritis of nonspecific origin, tuberculous arthritis and some of the other types might easily be overlooked.

In 1936 the second case in this country of monarticular septic arthritis due to brucellosis was reported by Kulowski.[25] The patient, a man aged 32, was a stock buyer. A painful swelling of the wrist developed three months after onset of constitutional symptoms diagnosed as Malta fever. The agglutination was positive for Br. suis. Surgical drainage was done. There is, however, no report of any cultures of fluid from this joint. One must certainly assume that the infection was due to brucellosis. In 1946 Ramseyer[26] of France reported a case of severe arthritis of the hip due to Bang's disease. Agglutination titers were positive on two occasions, in dilutions of 1:20 and 1:1,280. The roentgenologic appearance of the head of the femur was one of severe destructive arthritis. Material for cultures was not obtained.

One can therefore see that the reports of monarticular arthritis due to brucellosis are rare. The case of O'Donoghue[24] is the only one apparently proved by recovery of the organisms from the joint and cultures of these organisms. From our observations, we feel certain that the incidence of monarticular arthritis due to Brucella infection is much greater than has been suspected and a great deal higher than can be proved. One must first suspect the disease, and then the organisms must be cultured from the joint (or, next best, from the blood or bone marrow) before a definite diagnosis of Brucella arthritis can be made. An agglutination of 1:100 or more is suggestive, but it hardly proves that the arthritis is due to Brucella unless the organisms are recovered, and recovery and growth of the organisms is often difficult.

REPORT OF CASE

An unmarried farmer, aged 22, was admitted to the Mayo Clinic June 22, 1947, complaining of pain of eleven weeks' duration in the right thigh. He stated that on March 10, 1947, fourteen weeks before admission, he had had a gangrenous appendix removed by a surgeon in the locality of his home. On the fourth postoperative day pain had developed in the right groin. The pain lasted only twenty-four hours and then disappeared. On the tenth postoperative day he had a similar twenty-four hour episode of pain. On the thirteenth postoperative day he went home. The incision was still draining, but he felt well. Six weeks after he came home pain again developed in the right groin. He walked on crutches and the pain gradually subsided, though it never left completely. Two weeks before admission he was working in the fields when he felt a sudden severe pain in the right thigh and was taken to his local hospital. It was then noticed that he had a temperature of 99 to 102 F. He had been given penicillin and one of the sulfonamide drugs for two weeks prior to admission.

The past history was noncontributory. There were no diseases of note, nor any previous operations except the appendectomy. Examination at the time of admission revealed localization of his pain to the right thigh and groin. His temperature was 99.6 F. He appeared chronically ill and in pain. Cervical, axillary and inguinal lymph nodes were slightly enlarged. The results of general examination were normal except for the right hip area. Any movement of the hip was extremely painful. There was obvious quadriceps muscle atrophy. The result of abdominal examination was normal. There was tenderness in the upper medial aspect of the right thigh with low grade fever. Hip motions on the right were restricted.

During the patient's stay in the hospital he did not have a temperature of more than 99.6 F., except on one day when it went to 101 F. A summary of his laboratory findings during his course in the hospital showed the urinalyses to be all normal. The concentration of hemoglobin on admission was 13.2 gm. per 100 cc. of blood. Erythrocytes numbered 4,400,000 and 4,700,000 per cubic millimeter of blood on two occasions. On admission leukocytes numbered 8,400 per cubic millimeter of blood. They varied between this figure and 4,800 during his stay. The differential blood cell count the day after admission showed 28 per cent lymphocytes, 5.5 per cent monocytes, 64.5 per cent neutrophils and 2 per cent eosinophils. Twelve days later a repeat differential showed 24 per cent lymphocytes, 16 per cent monocytes, 56 per cent neutrophils and 3.5 per cent eosinophils, with 0.5 per cent basophils. Variations in the sedimentation rate were interesting. The day after admission it was 64 mm. per hour (Westergren). Thirty-three days later, it had fallen to 23 mm., eighty-two days later to 4 mm. and when the patient was last seen on Dec. 8, 1948 it was 2 mm. per hour. The flocculation reaction for syphilis was negative. The Mantoux reaction was 2 plus, using single strength purified protein derivative. Brucella agglutinations were positive on the eighth day after admission at 1:800. They remained positive at 1:800 for approximately five months, when the titer fell to 1:200. One year and five months after the patient was admitted the titer had fallen to 1:80. The agglutinations for typhoid, paratyphoid and proteus X 19 were negative. Blood cultures for Brucella were negative eleven days after admission, three months after admission and six months after admission. Roentgenograms of the thorax and spinal column were negative, but roentgenograms of the pelvis and right hip revealed osteoporosis of the head of the femur with evidence of early destructive arthritis (fig. 1). This was reported by the roentgenologist, who interpreted these roentgenograms as indicating probable tuberculosis.

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The patient's course in the hospital during this first admission was one of gradual improvement in subjective and objective observations. After examination of the patient, the suspicion of Brucella infection of the right hip was raised because of the acute onset of severe pain. This was not compatible with tuberculosis. When the Brucella agglutination was found to be positive, treatment was started. The patient was treated with 1 Gm. of streptomycin and 90 grains (about 6 Gm.) of sulfadiazine per day for nine days. Streptomycin alone was given for eleven days, and then streptomycin with sulfadiazine was given daily for nine more days.

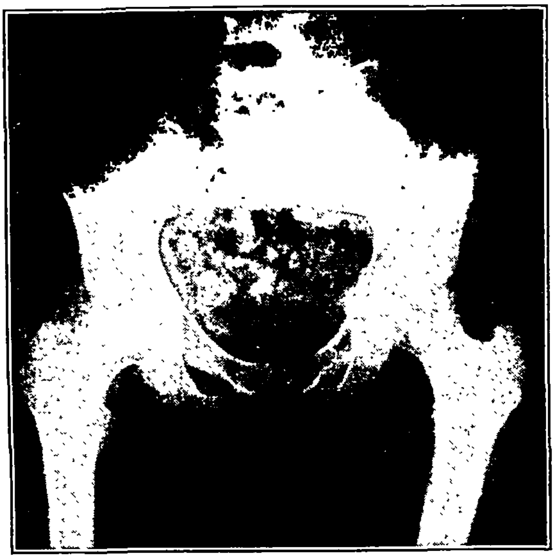

Fig. 1.—Appearance of hip at time of admission.

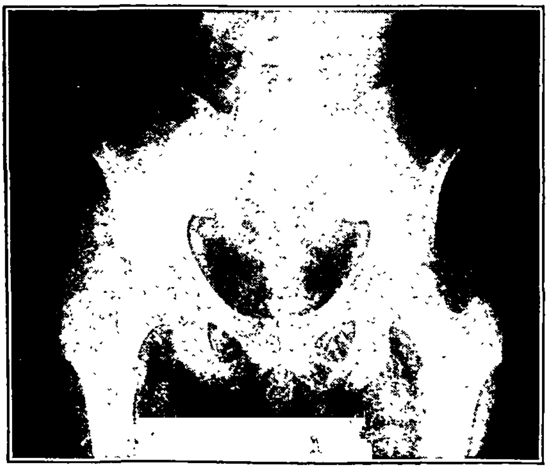

Fig. 2.—Appearance of hip eleven weeks after admission.

Thirteen days after admission, the right hip was aspirated with the patient under thiopental sodium anesthesia, the hip joint being entered anteriorly. A clear, glairy, slightly thickened fluid was obtained, which looked like fairly normal joint fluid. Smears of this fluid were negative for acid-fast bacilli. Routine cultures were sterile and cultures for Brucella organisms were later reported negative. Two days later, because of the negative smears and fairly normal appearance of the synovial fluid, it was considered best to inspect the hip joint and take a specimen of the synovium. This was done. The fluid this time appeared cloudier and thicker, and there were possibly 2 fluidounces (about 60 cc.) present. The articular cartilage of the femoral head showed severe early degeneration. Several specimens of the synovial membrane, which appeared pale and boggy, were excised for biopsy. Fluid and tissue were sent out in four separate tubes for routine culture, Brucella culture, inoculation of guinea pigs and histologic examination. After closure of the incision a single spica cast was applied. Histologic sections of the tissue showed nonspecific inflammation. The results of routine bacteriologic examination were normal. Cultures for acid-fast bacilli were negative after eight weeks. Cultures were positive for Br. suis. Nineteen days after the synovial biopsy the hip was again aspirated to determine the nature of the fluid. It was fairly bloody, and cultures of the fluid were negative for tuberculosis, Brucella and routine organisms.

Forty-three days after the original admission the patient was dismissed. The diagnosis of Brucella arthritis had been made, and he had been treated with sulfadiazine and streptomycin. He was in a hip spica and was comfortable; the sedimentation rate had fallen from 64 to 23 mm. per hour. Five weeks later he returned. He was walking on crutches, had no pain and had gained 12 pounds (about 5.4 Kg.). The systemic review was negative. His temperature was 98.6 F. The cast was removed, and the hip was found to move without pain. This was in great contrast to his condition at the original admission, when the least motion of his hip caused exquisite pain. Roentgenograms revealed the joint lines in the hip to be quite normal, though some atrophy of bone was still present (fig. 2). The sedimentation rate was normal, now being 4 mm. per hour. Further treatment did not appear to be indicated at this time because of the decided improvement. The patient was allowed to return home on crutches without a cast, but with no weight-bearing on the extremity.

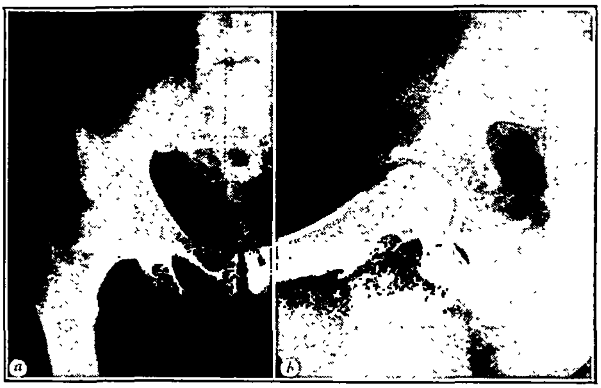

Fig. 3.—Appearance of hip about one and a half years after admission: *a*, anteroposterior view; *b*, lateral view.

On his third visit, four months after the second, the patient said he had no pain. He had a full range of painless hip motion, except for the last few degrees of internal rotation. Roentgenograms of the hip revealed normal conditions, except for a slight atrophy of bone. He had gained 20 pounds (about 9.1 Kg.) since his original admission; he had no fever, and his sedimentation rate was 2 mm. per hour. At this time we stated that he could start weight bearing.

The fourth admission of this patient was one and a half years after his original admission. He was apparently in excellent health. He had no symptoms whatever. He had been working hard as a farmer since his last dismissal. He did not complain of any pain or stiffness. There was no limp. There was a full range of motion in the left hip except for a few degrees of limitation of internal rotation. Roentgenograms of the hip were negative and looked the same as those of the opposite hip (fig. 3). His agglutination reaction for Brucella was 1:80 (fig. 4). We considered him cured, although because of the obvious involvement of cartilage at the time of biopsy, a note was made on his record that future hypertrophic arthritis was a strong possibility.

DIAGNOSIS AND BACTERIOLOGY

The diagnosis of brucellosis may frequently be suspected on the basis of history and general clinical observations but can be established with certainty only by bacteriologic procedures. Some investigators attach considerable importance to the opsonocytophagic index, skin testing with brucellergen® or agglutinating a known organism with the patient's serum. However, these procedures have many limitations. The first requires such painstaking laboratory technics and has such limited value that it is seldom available in even the more completely equipped diagnostic laboratories. The skin test is an allergic reaction similar to the tuberculin reaction and depends on the patient's having developed sensitization at some time prior to the test. Also, as with tuberculosis, the duration of sensitization may persist for an indefinite number of years and be falsely interpreted in the course of an acute illness developing later and due to some other agent. Agglutinins commonly develop during the course of the illness, but the rate of development and the final titer vary so that the agglutination reaction may be negative even when the organism has been proved to be present by *isolation in pure culture*. In some instances it appears that "agglutinin-blocking antibodies" may develop, which will prevent agglutination in the usual manner unless the serum has been heated to 56 C. for fifteen minutes. In other cases the agglutinins may be present in significant titer (1: 80 or more) as a result of a previous infection from which the patient has recovered or as a result of his having received either a brucellergen® skin test recently or Brucella vaccine therapy on a so-called therapeutic-test basis. It has recently been shown that members of the military forces who had received cholera vaccine might have significantly high titers of Brucella agglutinins. Serologic information in a given case can therefore have only limited diagnostic value, and conscientious efforts should always be made to isolate the organism.

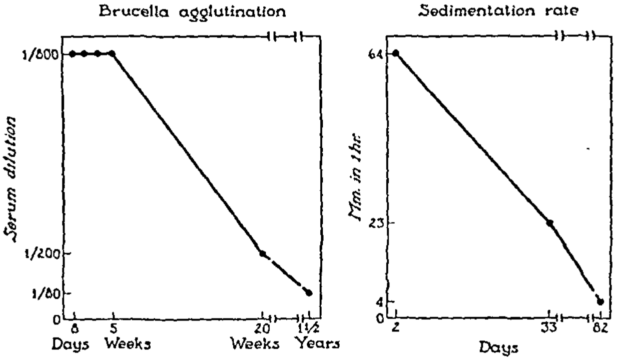

Fig. 4.—Changes in Brucella agglutination and sedimentation rate.

The isolation of Brucella is usually accomplished by inoculating blood, pleural or abdominal fluid, or urine if uncontaminated with mixed flora, into tryptose broth under 5 to 10 per cent carbon dioxide and incubating at 37 C. In our experience growth will usually begin to appear in two to four days; sometimes six or eight days are required. Some authors have found that cultures required three or four weeks' incubation for primary isolation. Br. abortus usually requires carbon dioxide, at least for primary isolation. Since the gas will not retard the suis and melitensis species, it is well to use it as a routine procedure. If the material is contaminated, as is the case with many biopsy specimens and many urine specimens, the material is best inoculated in quantity on tryptose or meat infusion blood agar plates and incubated in an atmosphere containing carbon dioxide. Animal inoculation (guinea pig) may sometimes be used to advantage, especially if there is much contamination, but it must be recognized that the animals may not show any gross pathologic features at the time of necropsy although the cultures of the *spleens may show many colonies of Brucella*. Many times the lesions in the liver or spleen may grossly resemble those of tuberculosis. Therefore one must always culture the spleens of the animals and isolate the organism in pure culture or fail to isolate it before making a positive diagnosis of brucellosis or considering it ruled out. It should be emphasized that all tissue, whether a human biopsy or liver, spleen or lymph node from an experimental animal, should be thoroughly minced with sterile scissors, ground to a paste *in a sterile mortar and diluted to make a 5 to 20* per cent emulsion which is used for culture. When the medium is inoculated with large pieces of tissue failure to isolate the organism may frequently occur even when it can otherwise be shown to be present.

It will be recalled that the diagnosis in this case was made by isolating the organism from the tissue removed from the hip joint and not from the fluid aspirated from the joint. We have had similar experiences with other patients and with other etiologic agents, and it is *our belief that the surgical pathologist must so handle* every specimen removed for biopsy that, unless it is of definite neoplastic nature, an ample portion is saved for thorough satisfactory bacteriologic examination. Our experience in human beings and in experimental animals has been that the histologic picture is so variable that one cannot make a positive diagnosis of brucellosis by that procedure alone. It therefore becomes necessary to do extensive bacteriologic studies on the biopsy specimen. This in turn means that the surgeon should *obtain as much tissue, pus or fluid as possible* and see that adequate portions get to the bacteriologist for thorough bacteriologic study.

TREATMENT

This patient was treated with a combination of streptomycin and sulfadiazine. The results which we *have obtained with this method of treatment have* been reported in detail elsewhere.[27] That this combination of drugs is a satisfactory method of treating brucellosis has been demonstrated by numerous investigators.[28] In the average case of acute brucellosis with bacteremia we have obtained good results using streptomycin and sulfadiazine simultaneously over a period of twelve to fourteen days. In the nonbacteremic forms of the disease in which chronic localized lesions involving the bone or joint have been present, as in this patient, a longer period of treatment has been desirable. Unless toxic effects have been experienced by the patient during administration of streptomycin or sulfadiazine, we have continued administration of the drugs for three to four weeks. The dose of regular streptomycin was usually 1 Gm. each day intramuscularly in divided doses. Neurotoxic effects are seldom encountered when this dose is given. Sulfadiazine was usually administered orally in a dosage of 6 Gm. daily for the same period; in some instances, as in this case, the sulfadiazine was administered in two courses of ten days each with a short rest period between the courses. Inasmuch as this patient has made a complete recovery, it would appear that the drugs used and the plan of administration employed were at least partially responsible for the excellent result obtained.

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In general the results obtained from the combined use of streptomycin and sulfadiazine have been satisfactory. However, there have been therapeutic failures and recurrences. Also, the toxic effects often encountered when these drugs are used alone or in combination make this method not entirely desirable for general use. At the present time the combination of aureomycin and dihydrostreptomycin as reported by Heilman [29] and by Herrell and Barber [30] appears to be a more effective method of treating infections due to Brucella and a method associated with a lower incidence of toxic reactions.

SUMMARY

1. A case of septic arthritis of the hip caused by Brucella *suis* infection has been presented in detail.
2. The diagnosis of Brucella arthritis is extremely difficult because of the problems involved in recovering the organisms.
3. If looked for, the Brucella organisms can be found occasionally in the most unexpected places.
4. In the present case, at least, the organism could be found only in the tissue and not in the synovial fluid.
5. An apparent cure in this case has been effected with the combined use of streptomycin and sulfadiazine.

ABSTRACT OF DISCUSSION

DR. R. BEVERLY RANEY, Durham, N. C.: Advances in chemotherapy have caused great change in the relative importance of various types of pyarthrosis. Acute hematogenous arthritis from staphylococcic or streptococcic infection has declined sharply. Acute gonococcic arthritis is now uncommon. The rarer types of joint infection are therefore assuming increased significance. In this group Brucella arthritis is an important entity. Subclinical brucellosis is a common infection in man; in 1939 Menefee and Poston found that 11.3 per cent of 1,122 Duke University students had positive Brucella agglutinations or positive skin tests. Recent statistics show that 6,073 cases of brucellosis were reported in the United States in 1947. Evans has estimated the actual number of cases to be at least 40,000 a year. Approximately 50 per cent of the patients have joint or muscle pain. Although septic arthritis is uncommon, in about 10 per cent of the cases of brucellosis the joint or muscle pain forms the patient's chief complaint. This may bring him first to the orthopedist. When the patient presents himself with a clinical picture suggesting Brucella arthritis, how can the diagnosis be established? Five immunologic tests are available: agglutination, complement fixation, bactericidal, skin and opsonocytophagic reactions. These tests are not always reliable. To identify a localized infection as brucellosis, the organism itself must be isolated. It has been cultured from joint fluid. Its culture from infected synovial tissue is difficult but, as the reported case demonstrates, can be accomplished. Having made a diagnosis of Brucella arthritis, one is in the fortunate position of being able to give effective antibiotic therapy. Brucella organisms are not affected by penicillin. They are moderately susceptible to sulfonamide compounds and are inhibited by streptomycin. The excellent result obtained by a combination of sulfadiazine and streptomycin in the reported case is evident. The still more effective use of a combination of aureomycin and dihydrostreptomycin recently at the Mayo Clinic has been mentioned.

DR. A. BRUCE GILL, Philadelphia: I am unable to contribute to this excellent paper from personal observations. The number of reported cases of brucellosis has been increasing in this country from 217 new cases in 1927 to 6,073 new cases in 1947. It is most prevalent in Iowa, Illinois, Texas and Wisconsin, although numerous cases have been reported in many other states. Arthralgia and myalgia are present in about one half of the cases, but in only about 10 per cent of the cases do these pains constitute a "chief complaint." In only a small proportion of this 10 per cent are there any objective signs of bone or joint involvement, and permanent joint changes are rare indeed. For this reason the attention of the orthopedic surgeon has seldom been directed toward this disease. There are no pathognomonic clinical signs. The various laboratory tests which the authors have described are difficult and have limited value. A positive blood culture can be obtained in not more than 25 per cent of the cases, and recovery of the organism from synovial fluid is even rarer. The authors have stressed the fact that an absolute diagnosis can sometimes be made only by a bacteriologic examination of affected tissues. The combined use of streptomycin and sulfadiazine has been the most efficacious treatment. It seems probable that aureomycin will eventually replace these drugs in the treatment of brucellosis. We are indebted to the authors for their clear and comprehensive presentation of this subject and for their warning that orthopedic surgeons may at times be called on to recognize and treat this disease.

DR. MARK B. COVENTRY, Rochester, Minn.: I would like to make a plea for biopsy in all cases of monarticular arthritis. Questionable cases should not be assumed to be tuberculous or rheumatic, but every effort should be made to find out what is causing the arthritis. In doing this I believe it is important to remove synovial tissue and inspect the joint. Every effort should be made by the bacteriologist who gets the tissue to examine it for all possible organisms. Even so, we are all disappointed, after obtaining material from the joints, when we find that the pathologist has said "inflammatory" and the bacteriologist has found "no organism," and we are right back where we started. It is my feeling that many of these undiagnosed cases may be due to virus infections and until we can recover the virus organism, culture it, and identify it, there are going to be many cases of monarticular arthritis in which we cannot make a definite diagnosis. I would like to thank Drs. Raney and Gill for their discussion and for their emphasis of the important points in this paper.

Thiamine Deficiency.—Clinical evidence of thiamine deficiency includes polyneuritis (dry beriberi), cardiovascular disturbances and edema. In severe deficiency, acute cardiac failure may occur Anorexia is common, while neurasthenic symptoms, digestive disturbances and constipation have been reported as early manifestations.—Grace A. Goldsmith, Chemical Measurements in Relation to Physical Evidence of Malnutrition, *Federation Proceedings,* June 1949.

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29. Heilman, F. R.: The Effect of Combined Treatment with Aureomycin and Dihydrostreptomycin on Brucella Infections in Mice, Proc. Staff Meet., Mayo Clin. **24**: 133-137 (March 16) 1949.

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Special Article

CONTROL AND ERADICATION OF BRUCELLOSIS IN ANIMALS

Report No. 1 of the National Research Council, Committee on Public Health Aspects of Brucellosis

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In the United States the policy of attempting to eradicate important livestock diseases has been adopted. The over-all philosophy has been, whenever possible, to live without rather than with many of the diseases which affect domestic animals and especially those transmissible to man. The policy has been economically sound. As a portion of the program, brucellosis of cattle and other domestic animals has received wide attention during the past fifty years. The Committee on Public Health Aspects of Brucellosis was appointed to review the pertinent information about brucellosis and to formulate the report which follows:

From available figures provided by cooperative federal-state records of the control and eradication of bovine brucellosis, approximately 5 per cent of the adult female cattle in the United States are affected with brucellosis. Therefore, at least 1,300,000 dairy and 800,000 beef cows are involved. These 2,100,000 infected cattle are confined to about 20 per cent of the herds throughout the country. From these figures and with the use of prices as of the fall of 1947, it was estimated that the total annual loss from decreased milk production, fewer veal calves and necessary replacements of dairy cows is approximately $92,000,000.

No federal-state figures are available for the incidence of brucellosis in swine, but from packing house surveys it is estimated that between 1 and 3 per cent of the total number are affected.

Brucellosis has proved to be one of the most difficult disease problems. There are many reasons for this, all of which must be understood if the Brucella threat to livestock economy and public health is to be curbed. The livestock disease problems with which we have dealt previously were solved largely by careful study and trial of various control and eradication plans. When the best plan had been developed, it was adhered to until the disease had been controlled successfully. With brucellosis, no single plan has proved effective under all conditions. It has been a real task for some leaders in the eradication of brucellosis to adjust themselves to this situation. The tendency has been to go all out for one particular approach rather than to face the fact that a modification or another plan might be more suitable. The confusion which has existed is to be attributed largely to the different veterinarians' ardent sponsorship of different plans. In most cases a willingness to accept the known information on brucellosis instead of adhering dogmatically to a pet plan would result in less confusion of both the owner and the veterinarian.

One of the difficulties has been the failure to agree on basic procedures and on a nationwide acceptance of them. Instead of getting together on the control and eradication of brucellosis, all have, in too many instances, engaged in the easier method of criticizing one another. Hours have been spent in heated discussion of details which should be left to the persons closest to the work.

A state of emergency has existed for one reason or another during nearly the entire period of fourteen years in which intensive control and eradication of brucellosis have been attempted on a nationwide scale. In the beginning the emergency was cattle surplus. Of late years the emergency has been scarcity. The surplus was related more to poor distribution and lack of purchasing power of the people than to excessive numbers of animals, and the shortage has been the result of demand and not actually fewer animals. During the period of surplus there were more owner demands for help than could be handled, even with the largest number of regularly employed veterinarians in history. As the change from a surplus to a scarcity occurred, the change from a large number of available veterinarians to the most serious personnel shortage experienced in any livestock disease eradication program also occurred. The result of this demand and personnel change has been a decrease of concerted effort. The effort has been spread too thinly. In many cases initial advances have not been followed through. When dealing with infectious diseases, one must continue with sound methods of control and eradication long after the average owner believes that the disease has been eliminated from his herd.

During this period of surplus and scarcity there has been an accelerated traffic in animals. This shifting and intermingling of animals between herds is one of the most serious obstacles to the control and eradication of any infectious disease. With a steady increase in sales barns, truck transportation and even air transportation, this increased traffic in livestock is probably here to stay.

Often there is open conflict between agricultural economics and the public health aspects of brucellosis. Here, again, is further evidence that there must be sound local administration in order to smooth out these differences and establish a workable over-all plan for the area in question.

From the foregoing statements it is obvious that many factors besides scientific knowledge operate in a disease control and eradication program. However, some facts about brucellosis which warrant enumeration have been acquired through observation and research. These are as follows:

1. There is no longer any doubt that a disease of domestic animals caused by members of the genus Brucella is being transmitted to man.

2. No successful practical method of treating brucellosis in animals has been found.

3. The standard serum agglutination test is an efficient but not perfect method of diagnosis.

4. There is no satisfactory practical method of differentiating between the agglutination reaction of the serum of an animal that has been vaccinated with

Brucella abortus strain 19 and that of the serum of an animal infected with fully virulent Brucella organisms.

5. Brucellosis can be eradicated from any herd when the procedures best adapted to the particular herd are followed through under the direction of persons trained in the control of livestock diseases, provided the owner or caretaker of the animals gives his full cooperation. Brucellosis can be eliminated from an area as well as from a single herd.

6. No disease of animals has ever been either controlled or eradicated until the carriers have either been destroyed or restricted in their movement. Failure to recognize this often results in the spread of brucellosis instead of its eradication.

7. To carry out a successful campaign against brucellosis, the cooperation of the producers is absolutely essential.

8. The complex natural course and self-limiting character of the symptoms of brucellosis have resulted in more misinformation than has been encountered with any of the livestock diseases thus far controlled.

9. The nature of brucellosis is such that when an attack occurs the owner usually sustains heavy losses, regardless of any assistance; therefore, the objective should be to locate the infection before its rapid spread occurs. To do this, it is necessary to depend on the best means of diagnosis available at present—the agglutination test. Prevention and not treatment should be the aim.

10. All Brucella-infected females do not abort, but all must be considered potential spreaders of the disease.

11. In order to provide added incentive to initiate disease control and to continue the efforts long after the owner may believe the job has been completed, it has been necessary to spend public funds to aid in defraying some of the expense to the owner.

12. Brucellosis is primarily an animal to animal contact disease. The infected animal is the source of Brucella infection of other animals or of man, either directly or indirectly.

13. Although Brucella abortus commonly infects cows, Brucella suis swine and Brucella melitensis goats, any one of the three types of Brucella may infect all these and other species of domestic animals. This fact requires recognition in control programs.

14. Young animals are less likely to contract permanent brucellosis than older animals. Susceptibility increases with age, up to a point, and the period of the first pregnancy is probably the period of most susceptibility

15. Brucella abortus strain 19 vaccine creates a measure of resistance when injected into cattle. Heifers 4 to 8 months of age usually develop fair resistance but not complete immunity after vaccination. This resistance decreases with time. A few vaccinated young heifers may become permanent reactors. Noninfected heifers and cows of breeding age also develop some resistance after vaccination, but a high percentage of such older animals become permanent reactors after vaccination, as demonstrated by the serum agglutination test.

16. No suitable vaccination has yet been advanced for brucellosis of swine, goats, sheep or horses.

17. Strain 19 vaccine has not been shown to have curative properties.

18. All available evidence supports the view that vaccinating calves with strain 19 does not set up a transmissible animal infection.

19. Vaccination properly falls in the category of an adjunct to control and is not a substitute for other means of control.

20. There are essentialy five fundamental steps which may be used to control and eradicate such an infectious disease:

(*a*) Diagnose the infection.

(*b*) Eradicate the infectious agent.

(*c*) Eliminate the susceptible host (immunization).

(*d*) Maintain the infected animal and the susceptible host apart from each other (isolation).

(*e*) Apply therapeutic measures.

Since no successful practical therapeutic measures are available as yet for brucellosis, the application of some or all of the other four basic steps seems necessary.

21. In view of the worldwide distribution of brucellosis in animals, recognition should be given to the importance of establishing and maintaining adequate restrictions on foreign importations that will minimize the risk of introducing more infection into the country.

With this brief outline concerning various aspects of brucellosis, certain general and specific recommendations may now be made for a nationwide brucellosis control and eradication program. Again it should be understood that many aspects of administration must be left to the local authorities.

BOVINE BRUCELLOSIS

For the control and eradication of bovine brucellosis, this committee believes that the recommendations of the Committee on Brucellosis of the United States Livestock Sanitary Association—the so-called National Plan—should be accepted, and hence the essentials of that report are reproduced here.

Recommendations for National Legislation. — The Secretary of the United States Department of Agriculture should be authorized to promulgate regulations governing interstate movement of animals infected with or exposed to Brucella.

Recommendations for State Legislation.—1. In the intial stages of the control of brucellosis in any area, the state shall sponsor a program when 65 per cent of the livestock owners possessing at least 51 per cent of the cattle have placed their cattle under any one or a combination of the four plans to be set forth in the following pages. Those owners not participating shall not be compelled to come under the program. As control and eradication of brucellosis advance in a given area, the point will eventually be reached where the incidence of infection is very low. At that time the few remaining vestiges or pockets of infection must be eliminated. When 75 per cent or more of the livestock owners possessing 95 per cent or more of the cattle in a given area sign up under any one or a combination of the four plans, the livestock sanitary official may require the remaining livestock owners individually to select and come under one of the four plans described herein.

2. Reports must be made to the state and federal cooperating agencies, of all activities in connection with the disease, such as vaccinating and testing for agglutinins, on forms furnished by these cooperating agencies.

3. A *permanent brand with the letter "B" not less* than 2 inches high and 2 inches wide must be placed on the left jaw of every reactor, except registered purebred cattle or cattle eligible to registry otherwise permanently identified. Reactors must also be quarantined to the premises where found, movement of these animals being limited by permit of state officials to slaughter at points where state or federal inspection is maintained, except valuable purebred animals, which must be branded and may be allowed to move on permit of state officials to other herds where Brucella infection is known to exist.

4. All services in connection with the control and eradication of brucellosis should be made available to the owners without expense to them so long as funds are available for such purposes, except the handling of their cattle. When state and/or federal funds are not available, it is recommended that the breeder shall continue his program at his own expense with his private veterinarian under the supervision of state and federal veterinarians.

5. Only vaccine approved and manufactured under license of the Bureau of Animal Industry of the United States Department of Agriculture shall be used in any brucellosis control and eradication program.

6. Authorization shall be provided project workers to enter premises and perform like offices.

7. All phases of official brucellosis control and eradication programs should be conducted under supervision of full time state, federal, county or municipal veterinarians. This provision is not intended to eliminate the practicing veterinarian but is intended to promote and include his services and to provide for supervision of his activities by regularly employed veterinarians.

8. All vaccinated cattle should be permanently identified by tattooing a "V" in the right ear, preceded by the numeral of the quarter of the year and followed by the last number of the year. Thus an animal vaccinated in December 1947 should be marked "4V7." Or they may be hot iron branded on the right jaw, "CV" being used for vaccinated calves and "AV" for vaccinated adults. Special ear tags should also be used in the right ears of all vaccinated animals to aid in recognizing them.

9. A future date should be set after which no female cattle or breeding bulls more than 6 months of age shall be sold and/or moved, except for slaughter, unless such cattle either

(*a*) have been tested for brucellosis and found nonreactive within thirty days prior to the date of sale, or

(*b*) are dairy cattle and breeding cattle less than 24 months of age or feeder cattle less than 30 months of age that were vaccinated against brucellosis with an approved vaccine when they were not less than 6 months nor more than 8 months of age and were identified as provided in paragraph 8 and reported at the time of vaccination to state and federal cooperating agencies, except beef cattle in range or semirange areas, which may be vaccinated at not less than 6 months nor more than 12 months of age, or

(*c*) are in a brucellosis-free accredited herd or area at the time of sale. Accredited herd certificates shall be issued only by the Bureau of Animal Industry, United States Department of Agriculture, and state livestock sanitary officials, under provisions adopted by the United States Livestock Sanitary Association and approved by the Bureau of Animal Industry.

10. Legislation should be broad enough to authorize state livestock sanitary authorities to promulgate, after hearings before representative livestock producers, public health authorities and veterinarians, regulations including the following methods of procedure for eradicating brucellosis:

Plan A: Test-and-slaughter, with or without vaccination of calves. This plan has the advantage of being a short time program, since many lightly infected herds may be freed and remain free from the infection after a limited number of tests. When herds whose serum tests show no agglutination are surrounded by heavy infection, the advantages of calf vaccination should be explained.

Test-and-slaughter is recommended for infected herds in which the immediate removal of reactors will not cause serious economic losses, provided owners follow recognized sanitary procedures, with prompt removal of reactors, thorough cleaning and disinfection of barns or buildings in which reactors have been kept, and retests at intervals not to exceed twenty days until the disease has been eradicated.

The *test-and-slaughter plan is likely to be unsuccessful unless* all these procedures are followed. However, it has been successful in thousands of herds where suitable precautions have been observed.

Calf vaccination should be encouraged in infected herds and areas but should not be a substitute for sound sanitation and management. Failure to follow sound management practices, so far as replacements are concerned, accounts for most of the breaks in clean herds. Owners should be warned that, as is true in many other disease control and eradication programs, occasional herds do not respond satisfactorily.

Plan B: Test, vaccination of calves and temporary retention of reactors until they can be disposed of for slaughter without excessive loss to the owner under provisions of the law. The objective should be to dispose of reactors for slaughter as soon as possible. Full recognition is given to the fact that vaccinated calves will not all be resistant. However, the percentage of vaccinated animals having increased resistance is sufficiently high to support wider use of this procedure.

Plan C: Calf vaccination without test of any part of the herd. This plan should be confined to those herds in which the movement of animals is restricted to special permits issued by state livestock sanitary officials.

Plan D: Adult vaccination. This should be used only when approval has been received in writing from state and federal cooperating agencies prior to the time of vaccination. *It should* be confined to herds where there is evidence of rapid spread of virulent infection, indicating the need for emergency measures, and only after the owner has been informed in writing that the vaccinating of his adult animals may not prevent the spread of infection. Herds for which adult vaccination is adopted must be subjected to the agglutination test prior to vaccination, reactors identified as provided for in paragraph 3, and vaccine administered only to brucellosis-free animals within ten days after completion of the official test.

11. Reactors will be classified as under present policies of the United States Bureau of Animal Industry, except

that calves vaccinated at ages from 6 to 8 months, identified as outlined in paragraph 8 and reported at the time of vaccination to state and federal cooperating agencies shall not be classed as reactors until after reaching the age of 2 years. Feeder cattle vaccinated at ages from 6 to 12 months shall not be classed as reactors until after reaching 30 months of age.

Educational Policies.—All properly verified facts concerning the disease and methods of control and eradication should be kept before the public under the direction of persons trained in disseminating information. Such information should include attractively illustrated bulletins and leaflets, based on and confined to present knowledge of the disease which has been properly verified by research and practical application; a moving picture; news releases; radio programs, and all other known methods of publicity.

Frequent group meetings should be held, led by regularly employed state or federal cooperating veterinarians, in the interest of eliminating confusion.

All properly verified useful information which becomes available through research should be disseminated in connection with the control of brucellosis in other animals, including swine, goats and sheep.

SWINE BRUCELLOSIS

Unfortunately, proposals for the control and eradication of brucellosis of swine cannot be substantiated by the vast experience which accompanies proposals for the control of bovine brucellosis. There are no official recommendations, rules or regulations for the control of swine brucellosis that have been tried on a statewide or nationwide basis. In fact, livestock sanitarians and veterinarians have been prone to ignore the effects of swine brucellosis.

In the control of swine brucellosis, it is known that the standard serum agglutination test as now applied is adequate as a herd diagnostic procedure but may not be sufficiently reliable to use in determining the status of the individual animal. Thus, with present methods, the problem of the control and eradication of the disease in swine resolves itself into a herd problem rather than an individual animal problem. This fact alone is highly important, since operations of this nature present innumerable difficulties for any sanitary official when rules and regulations covering the movement and interchange of swine are involved. However, there is some precedent or experience on which to base official rules and regulations governing interstate and other movements of animals when control is conducted on a herd rather than an individual animal basis. Eradication work with such diseases as tick fever, sheep scab, and foot and mouth disease has demonstrated this fact.

Since neither test and immediate slaughter of reactors nor vaccination has been satisfactory in the control of swine brucellosis, the following two plans of control are suggested as a guide for veterinarians and swine raisers:

Plan 1: Sale of entire herd for slaughter. This plan may be applied to herds, large or small, where the primary consideration is the production of pork. It is quick, easy and economical. An interval of three to six months may be necessary to dispose of the entire herd, feeder pigs and all, and to clean and disinfect the premises and equipment. Replacements should be from herds free of brucellosis. Periodic blood tests should be conducted on the new herd as a means of detectin
be present on the premises. Early detecti
may become infected from the premises is
the entire replacement herd.

Plan 2: Test, segregation and delayed sla
herd. The details of this plan are:

(*a*) Blood test the entire breeding herd.

(*b*) If infection is present, consider the entire herd as infected rather than remove the positively reacting animals. Manage the herd as a unit.

(*c*) Raise pigs from this infected unit. Wean and test the pigs at 8 weeks of age. Isolate the nonreactors on clean premises as far removed as possible from the infected parent herd. Maintain this isolation until the infected parent herd is disposed of for slaughter.

(*d*) Blood test the pigs up to and during the first pregnancy. Remove all reactors as they occur. Breed to noninfected boars only those gilts whose blood tests are negative.

(*e*) Dispose of the original infected herd as soon as suitable nonreacting replacements are available or as soon as it is obvious that the plan is giving satisfactory results.

(*f*) Thoroughly clean and disinfect premises where an infected herd has been kept, prior to admission of clean replacement stock.

This plan provides for the raising of pigs from the infected parent breeding stock in such a manner that clean replacements of known blood lines are available. The original infected herd must ultimately be disposed of for slaughter, but this is delayed until the quality, the number and the disease status of the pigs are known. This plan avoids the necessity of purchasing replacements from unknown sources and also aids the breeder in maintaining desirable blood lines.

Plan 2 has been used under experimental field conditions and has worked. It is the method of choice for purebred herds or for herds where improved blood lines have been developed even if the ultimate objective of the owner is the production of pork rather than the sale of breeding stock.

The length of time required for disposition of the infected herd will depend on whether the one litter or the two litter system is employed. Naturally the two litter system will involve more difficulties, since numbers of swine alone will tend to complicate control. A decrease of the numbers of breeding swine is advisable in plan 2. In either the one or the two litter system it is necessary that the infected parent swine be completely and permanently segregated from the weaned and tested offspring.

Plan 2 does not necessitate complete cessation of swine production at any time during the operation of the plan, but the chances of success are enhanced if the size of the herd is reduced during the period of segregation.

BRUCELLOSIS IN OTHER ANIMALS

Control and eradication of brucellosis in sheep, goats and horses probably do not require a nationwide uniform program, but cognizance should be taken of the fact that these species may be affected and may transmit the disease to other domestic animals and to man.

SUMMARY

Control of brucellosis in animals is desirable from a strictly agricultural economic viewpoint, but, in addition to that, a public health problem is posed by brucellosis which cannot be measured in dollars and cents. In the light of present knowledge it appears that the satisfactory control and eradication of brucellosis in man are dependent on prevention of the possibility of his being exposed to infected animals and animal products, and thereby are largely a veterinary problem.

Clinical Notes, Suggestions and New Instruments

EFFECT OF DICUMAROL® ON THE ERYTHROCYTE SEDIMENTATION RATE

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The recent common use of dicumarol® in patients requiring the determination of the sedimentation rate of erythrocytes raises the question of how dicumarol® affects the sedimentation rate. The little available information is discordant.

On the one hand, Peters, Guyther and Brambel [1] reported that, with dicumarol® therapy in coronary thrombosis, the sedimentation rate is increased by the drug to such an extent that it no longer serves as an index of healing of the damaged myocardium. Contrariwise, Wright and Prandoni [2] observed that the administration of dicumarol® is not accompanied with an increase in the sedimentation rate. Cosgriff [3] recently reported that the rate is not affected in normal persons. Falk,[4] while stating that the sedimentation rate is affected, expressed the belief that the test has value.

We therefore studied the effect of dicumarol® on the sedimentation rate in the following groups: (1) persons with normal sedimentation rates, (2) patients with myocardial infarction and elevated sedimentation rates who received dicumarol® for therapeutic purposes and (3) other patients with elevated sedimentation rates, but who did not require anticoagulants for therapeutic purposes. We selected patients in this last group with hematocrit readings between 40 and 50 per cent, to avoid the possible effect of anemia on the sedimentation rate.

METHOD AND PROCEDURE

Five cubic centimeters of blood were drawn from the antecubital vein and placed in a test tube containing the Heller-Paul anticoagulant mixture (6 mg. of solid ammonium oxalate and 4 mg. of solid potassium oxalate). The sedimentation rate was measured in Wintrobe tubes. One reading was made at the end of 60 minutes. Prothrombin times were determined according to the Quick method, with Difco thromboplastin. The normal controls ranged between 12 and 14.5 seconds.

Group 1 consisted of 12 persons with normal sedimentation rates, 2 of whom were given one dose of 500 mg. of dicumarol® on the first day of the study only. The other 10 subjects were given daily doses of dicumarol,® the amount depending on the prothrombin time. The daily dosage ranged from 50 to 300 mg. The sedimentation rates were studied daily for seven days. The results showed that, despite the depression of prothrombin to as low as 3 per cent of normal, the sedimentation rates remained normal.

Group 2 consisted of 7 patients with acute myocardial infarction. The effect of dicumarol® on the sedimentation rate in these 7 patients were studied. The drug was given in divided doses, that is, 200 or 300 mg. on the day of admission and then sufficient dicumarol® daily to maintain the blood prothrombin at therapeutic levels (5 to 20 per cent of normal). Dicumarol® did not increase the sedimentation rate. In fact, there was a gradual diminution in the sedimentation rate during the early stage of illness, despite the decreasing levels of the blood prothrombin.

Also included in group 2 were 7 patients selected at random from our case record files, with acute myocardial infarction, treated with dicumarol® and who were admitted in the last two years. The charts were analyzed. It was found that the sedimentation rate followed the clinical course. When the sedimentation rate remained elevated for a prolonged period, sufficient disease to explain this increase was present. Those who were improving clinically showed a decreasing sedimentation rate, despite the fact that the prothrombin levels were either unchanged or even lowered.

Group 3 included 8 patients with medical conditions other than myocardial infarction and with elevated sedimentation rate, but who did not require anticoagulants for therapeutic purposes. Here, too, the sedimentation rate followed the clinical course. The patients who were improving showed a gradual diminution of sedimentation rates, whereas in those whose clinical condition warranted it the sedimentation rate remained elevated. Dicumarol® was given in daily doses to maintain the blood prothrombin at therapeutic levels.

CONCLUSION

Dicumarol® has no effect on the sedimentation rate whether given in therapeutic or somewhat larger doses.

SEPTICEMIA DUE TO SALMONELLA ENTERITIDIS AND SALMONELLA BLEGDAM

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In August 1947 two of us (M. P. B. and J. H. B.) published a paper entitled "Septicemia due to Salmonella Enteritidis" in the *New England Journal of Medicine*.[1] In a footnote we referred to 14 similar cases which had been observed at an Australian general hospital at Port Moresby, New Guinea, unaware that these cases had been included in a series of 50 cases of infection due to Salmonella enteritidis var. blegdam in Australian soldiers, the details of which were published in the *Medical Journal of Australia* [2] in March, 1946.

On clinical and epidemiologic grounds there was good reason to believe that the patients described in the two papers were infected with the same organism, and efforts were therefore made to compare the strains on which the specific diagnoses had been based. The single strain of Baker and Bragdon,[1] strains from cases 8 and 10 of Fenner and Jackson [2] and N 8 and N 9 of Jones and Fenner [3] were examined by Drs. P. R. Edwards, D. W. Bruner, E. Seligmann and Miss Nancy Atkinson. Dr. F. Kauffman examined the Baker and Bragdon strain. All the strains proved to be S. enteritidis var. blegdam.

We propose herein to correct the mistaken diagnosis of S. enteritidis septicemia.[1] This is of some importance, for there is already considerable confusion in the literature concerning infection due to S. enteritidis associated with invasion of the blood stream.

From the Medical and Laboratory Service of the Beth Israel Hospital, New York.

[1] Peters, H. R.; Guyther, J. R., and Brambel, C. E.: *Dicumarol in Acute Coronary Thrombosis,* J. A. M. A. **130:** 398 (Feb. 16) 1946.

[2] Wright, I., and Prandoni, A.: The Dicoumarin 3,3'-Methylene-Bis-(4-Hydroxycoumarin): Its Pharmacologic and Therapeutic Action in Man, J. A. M. A. **120:** 1015 (Nov. 28) 1942.

[3] Cosgriff, S. W.: *The Effect of Heparin and Dicumarol Anticoagulant Therapy upon the Erythrocyte Sedimentation Rate,* J. Clin. Investigation **27:** 435 (July) 1948.

[4] Falk, O. P. J.: Treatment of Coronary Artery Disease: Dicumarol Therapy, J. A. M. A. **134:** 491 (June 7) 1947.

The strains of Salmonella were examined by Drs. Edwards, Bruner, Seligmann and Kauffman and by Miss Atkinson.

Surgeon (R), United States Public Health Service, National Institutes of Health (Dr. Bragdon); from the Rockefeller Institute for Medical Research, *visiting investigator, on a fellowship of the* Australian National Health and Medical Research Council (Dr. Fenner) and from the Alfred Hospital, Melbourne, Australia (Dr. Jackson).

[1] Baker, M. P., and Bragdon, J. H.: New England J. Med. **237:** 175, 1947.

[2] *Fenner, F., and Jackson,* A. V.: M. J. Australia **1:** 313, 1946.

[3] Jones, H. I., and Fenner, F.: M. J. Australia **2:** 356, 1947.

S. enteritidis var. blegdam has been isolated from the blood of human beings in Copenhagen, Denmark,[4] Shanghai, China,[5] New Guinea,[6] Philippine Islands[7] and Louisiana.[8] In 74 of the 80 published cases there was evidence that invasion of the blood stream had occurred. Infection due to S. enteritidis var. blegdam must therefore be considered a severe, widely distributed and not particularly rare disease. In view of the close antigenic resemblance between the two organisms it is possible that other cases of "S. enteritidis" infection characterized by invasion of the blood stream, such as those described by Huang, Chang and Lieu[9] in China and Hayes and Freeman[10] in India, may really have been caused by S. enteritidis var. blegdam.

Council on Physical Medicine and Rehabilitation

REPORTS OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

Howard A. Carter, *Secretary.*

STEPHENSON RESUSCITATOR, PHYSICIAN'S AND OFFICE MODELS, ACCEPTABLE

Manufacturer: Stephenson Corporation, Red Bank, N. J.

The Stephenson Resuscitator, Physician's Model, is a portable device for delivering oxygen, under alternating positive and negative pressure, to a patient by means of a mask. The weight, complete with tank, is 8 Kg. (17 pounds); the weight when packed for domestic shipment is 9 Kg. (20 pounds), and for foreign shipment 11.4 Kg. (25 pounds). The apparatus is housed in a case with over-all dimensions of 23 by 20 by 48 cm. (9 by 8 by 19 inches). The Council obtained evidence that the device is sturdily built.

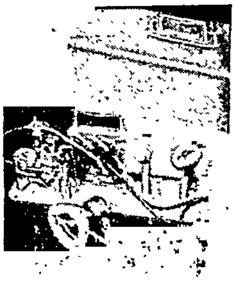
It is of the intermittent positive and negative pressure type and can be used as a resuscitator, an inhalator or an aspirator. Positive and negative pressures may be adjusted by using a dial that reads "adult" and "infant" with intermediate gradations. At the "adult" setting a mask pressure of plus 13 and minus 8 mm. of mercury is produced. At the "infant" setting a mask pressure of plus 8 and minus 3 mm. of mercury is produced. These pressures are attained when the resuscitator is held in any position.

When prevented from "cycling" by occlusion of the outlet for negative pressure, the apparatus produced a continuous flow of positive pressure not exceeding 22 mm. of mercury or of negative pressure not exceeding minus 10 mm. of mercury. When a full oxygen cylinder was attached (1,800 pounds per square inch, or 122 atmospheres), it delivered oxygen for twenty-four minutes.

The resuscitator is equipped to deliver pure oxygen or a mixture of air and oxygen. Mixture with air is regulated by a setting on the "face piece" to which the mask is attached. Since a constant flow of oxygen is delivered, depending on the pressure which has been selected, the speed of cycling is regulated by the mixture of air with the oxygen. At the "adult" pressure setting, pure oxygen is delivered at the cycling speed setting of "slow." With the pressure setting at "adult" and the cycling speed setting at "fast," the same volume of oxygen is delivered, but an additional 1.6 volumes of air is delivered. In these circumstances the apparatus cycled 2.6 times as fast. The concentration of oxygen then was about 40 per cent, including the volume of oxygen delivered from the tank and the partial pressure of oxygen in air. Concentrations of oxygen between 40 and 100 per cent were obtainable by altering the setting of the cycling speed regulator between "fast" and "slow."

The apparatus may be used as an inhalator. With the resuscitator attachments being used, the mask is held a small distance away from the face. Failure to attain an appreciable positive pressure in the mask prevents cycling.

A satisfactory aspirator is included, which works by a Venturi effect. The aspirator can be used simultaneously with the resuscitator or inhalator, which may be advantageous in some circumstances.


Stephenson Resuscitator, Physician's and Office Models

A slightly different form of the Physician's Model is called the Office Version. While both types are portable, the Physician's Model is better suited to transportation by automobile in emergencies outside the office, while the stability of the Office Version makes it more convenient for use inside the office. It employs the essential parts already described and in addition a substantial base holding a size D or E oxygen cylinder with the mechanism and a handle affixed to the top. These cylinders are 122 cm. (48 inches) high. Size D has a diameter of 19 cm. (7½ inches), while size E has a diameter of 18 cm. (7 inches).

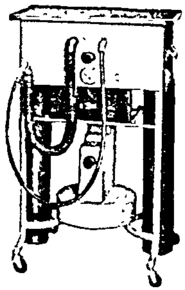
The Council on Physical Medicine and Rehabilitation voted to include the Stephenson Resuscitator, Physician's Model and Office Model, in its list of accepted devices.

McKESSON RESUSCITATOR AND INHALER ACCEPTABLE

Manufacturer: McKesson Appliance Company, 2226 Ashland Avenue, Toledo 10, Ohio.

The McKesson Resuscitator and Inhaler is designed to administer oxygen to apneic patients. The oxygen is supplied either by intermittent positive pressure or by continuous flow at low pressure. Three models are furnished: a portable model in a carrying case and two hospital models, one of which accommodates the small D or E size cylinders and the other two large cylinders. Aspirators and adjustable volume controls are optional on all models.

Accessories include an infant inhaler hood, two other hoods, a head harness, a metal airway (infant size), a metal airway (adult size) and two wrenches. The over-all dimensions of the apparatus are 86 (height) by 46 by 60 cm. (34 by 18 by 22 inches) and the weight is 28 Kg. (62 pounds). The shipping weight is 37 Kg. (82 pounds).


McKesson Resuscitator and Inhaler

Evidence of satisfactory construction and effective operation was obtained from the field and from a laboratory acceptable to the Council. In the announcement of acceptance, however, it is desirable to call attention to certain reservations made in connection with similar apparatus accepted in the past. Possession of mechanical devices for use in resuscitations does not obviate the need of teaching manual procedures, like the Schafer prone pressure method, that are instantly available in emergencies while apparatus is being sought by assistants. This apparatus should be used only by specially trained personnel. With these reservations, the Council on Physical Medicine and Rehabilitation voted to include the McKesson Resuscitator and Inhaler in its list of accepted devices.

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[4] Kauffmann, F.: Ztschr. f. Hyg. u. Infektionskr. **117:** 431, 1935.

[5] Fournier, J.: Bull. Soc. path. exot. **32:** 643, 1939; cited by Kauffmann. F.: Die Bakteriologie der Salmonella-Gruppe, Kopenhagen, 1941, p. 264. Raynal, M. J. H.: Bull. Soc. path. exot. **40:** 212, 1947.

[6] Baker and Bragdon.[1] Fenner and Jackson.[2] Jones and Fenner.[3]

[7] Stevens, R. B.: J. Bact. **52:** 146, 1946.

[8] Holt, R. A., and Newton, H.: J. Lab. & Clin. Med. **33:** 1155, 1948.

[9] Huang, C. H.; Chang, H. C., and Lieu, V. T.: Chinese M. J. **52:** 345, 1937.

[10] Hayes, W., and Freeman, J. F.: Indian J. M. Research **33:** 177, 1945.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

Edited by
MORRIS FISHBEIN, M.D.
Assistant Editor, AUSTIN SMITH, M.D.

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Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, OCTOBER 1, 1949

WORLD ASPECTS OF SOCIAL MEDICINE

While the United States is at this time a seething cauldron of discussion relative to social changes in the administration of medical service, the subject is of equal, if not greater, concern in Great Britain and attracts constant consideration in most other countries.

During the war Nazi Germany saw the National Socialist State medicine become an instrument of fascist domestic and foreign policy. According to Rosen,[1] physicians had to accept and further the principles of National Socialism. Research was directed toward justifying National Socialistic racial doctrines. Many health insurance institutions were suppressed. Nature healing was officially recognized. In the ensuing years medicine in Germany deteriorated, became detached from scientific progress and lost such leadership as it had previously had in medical science of the world.

A survey of medical education in Western Germany during 1948 [2] calls attention to the fact that purges of faculty members by the Nazi and later by denazification boards and the Allies have seriously depleted the ranks of competent teachers. Nevertheless, the attractions of a medical career are so great that nearly 50 per cent of all higher students in Germany in 1948 were medical students.

Conditions in China have been deplorable for many years. Dr. R. V. Hemenway [3] reports that there has been only one scientifically trained physician for every 156,000 persons in China and that there are fewer hospital beds for all of China than for New York City alone. Scientific medical care for the blind, the crippled, the lepers, the aged and the destitute is totally lacking. At present some progress is being made, but in the midst of civil war, as might be expected, medical institutions suffer.

From Budapest comes a report by Sabanov[4] on thirty years of Soviet public health. He reports 750,000 hospital beds in Russia in 1946, 72 medical faculties with 100,000 undergraduate students and 12 institutes for postgraduate medical study. He reports also that one half of the women from the villages are cared for during childbirth in maternity homes. During World War I, typhus, plague and cholera menaced all Russia. Sabanov says that plague, cholera, smallpox and typhoid have disappeared and that typhus is rare.

A Bulgarian physician, Vassilev,[5] offers a consideration of the present state of medical organization in Bulgaria. His recommendations are significant of what occurs to medical organizations when the state takes over. The abstract indicates that there are in Bulgaria two organizations, one the Bulgarian Medical Association and the other the Union of Public Health Personnel. Vassilev says that the existence of two such organizations is purposeless, since the union has much broader activities. Practically all physicians are employed by the state, and their interests as employees are safeguarded by the union. With the decline of private practice as socialized medicine advances, according to Vassilev, the safeguarding of the interests of private practice becomes practically useless. The union includes all public health personnel, whereas the medical association is limited to physicians, and, according to Vassilev, the union can therefore care much more adequately for productivity in the field of public health. Finally he says, "The Union is more effective and practical in carrying out Marx-Lenin education than the Medical Association."

From Czechoslovakia comes a statement by Málek[6] contrasting existing situations with those that prevailed formerly. He says briefly that the bourgeois-capitalist system in Czechoslovakia gave neither sufficient material nor spiritual incentive to research workers; they were not selected properly, nor were the biologic sciences sufficiently organized. He recommends, therefore, that all these factors be changed. University professors and teachers will be organized not only for research but also to teach and will be held responsible for producing young research workers. Appointments will be for three to five years only, and this, he feels, will give incentive to professors and chiefs to work harder. Finally he suggests, "New scientific societies and institutions will have to be founded in the new socialist society on the pattern of the Viam Institute of the U. S. S. R. or the Rockefeller Institute in the U. S. A." The communist government in Czechoslovakia abolished the medical society within eight months after it took control of the government. It intimated that medical affairs would hereafter be handled through trade unions.

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[1] Rosen, G.: Medicine under Hitler, Bull. New York Acad. Med. **25**: 125, 1949.

[2] Ghent, E. R.: Medical Education in Western Germany, McGill M. J. **17**: 434, 1948.

[3] Hemenway, R. V.: Chinese Medicine, M. Woman's J. **55**: 54, 1948.

[4] Sabanov, A.: Thirty Years of Soviet Public Health, Népegészségügy **30**: 133, 1949.

[5] Vassilev, V.: Professional Unity of Public Health Personnel, Ann. méd. **40**: 790, 1948.

[6] Málek, I.: Education of Young Research Workers in Biological Sciences, Časop. lék. česk. **87**: 611, 1948.

Most of the information here supplied is taken from abstracts which appear in *Excerpta Medica* (Medical Microbiology and Hygiene, July 1949, vol. 2, sect. 4). The abstracts are unusual in that such material does not appear elsewhere and certainly not in easily available abstract services. The material comes from periodicals published in German, Czechoslovakian, Russian, Bulgarian and English languages. Material on other phases of epidemiology is included and actually covers all the important medical periodicals of the world. Nowadays the doctor is not well informed unless he is at least aware of world medical problems.

MATERNAL MORTALITY RATES AGAIN LOWER

Provisional figures on maternal mortality in the United States collected by correspondence with state public health agencies indicate a continuation of the downward trend in maternal mortality rates reported in THE JOURNAL last May. The United States will undoubtedly show a rate of not more than 1.2 maternal deaths per thousand live births in 1948; a drop of 0.1 from the previous year.

Maternal Mortality, 1933, 1947 and 1948
(Deaths per Thousand Live Births)

State	1933	1947	1948	State	1933	1947	1948
Alabama...........	7.5	2.6	2.3	Nebraska........	4.6	1.1	0.6
Arizona............	6.5	1.8	1.5	Nevada..........	8.1	1.2	1.6
Arkansas..........	7.8	1.8	2.1	New Hampshire..	6.9	1.1	1.2
California.........	4.6	1.0	0.9	New Jersey.......	5.4	1.0	0.8
Colorado..........	6.2	1.3	1.1	New Mexico......	8.6	2.1	2.3
Connecticut........	5.0	0.7	0.6	New York........	6.2	1.0	0.9
Delaware..........	6.9	0.8	0.9	North Carolina..	6.8	1.7	1.9
Dist. of Columbia.	5.0	1.1	0.7	North Dakota...	4.9	1.1	1.1
Florida............	11.5	2.2	1.9	Ohio.............	6.1	1.2	0.9
Georgia............	7.5	2.5	2.3	Oklahoma.......	6.5	1.7	1.2
Idaho..............	4.3	1.0	0.7	Oregon..........	5.5	0.9	0.4
Illinois.............	5.0	1.0	0.8	Pennsylvania....	5.8	1.3	0.7
Indiana............	5.9	1.1	1.0	Rhode Island....	5.7	0.9	0.9*
Iowa...............	5.3	0.9	0.7	South Carolina..	8.0	2.6	2.3
Kansas.............	5.5	1.0	0.9	South Dakota...	4.8	1.0	0.7
Kentucky..........	5.3	1.8	1.5	Tennessee........	6.0	1.7	1.8
Louisiana..........	8.4	1.9	1.6	Texas............	7.7	1.5	1.6
Maine..............	7.0	1.5	0.7	Utah.............	4.5	0.8	0.6
Maryland..........	5.0	1.0	0.9	Vermont.........	5.7	1.2	1.0
Massachusetts.....	6.7	0.9	0.7	Virginia..........	6.3	1.7	1.4
Michigan...........	6.1	1.1	0.8	Washington.....	6.4	1.1	0.7
Minnesota.........	4.4	0.6	0.7	West Virginia....	5.7	1.6	1.2
Mississippi.........	7.3	2.6	2.7	Wisconsin........	5.0	1.1	1.0
Missouri...........	5.8	1.4	1.0	Wyoming........	5.7	0.8	1.1
Montana...........	5.7	1.1	0.9	United States....	6.2	1.3	1.2

* 1947 data.

Sources: Vital Statistic Rates in the United States, 1900-1940, United States Department of Commerce, 1940. Maternal Mortality Rates by States, 1947, Federal Security Agency, United States Public Health Service, National Office of Vital Statistics, Release (not dated). Unpublished provisional reports for 1948 from state health departments.

The provisional maternal mortality rates by states are shown in the accompanying table. Twenty-seven states and the District of Columbia have rates at least as low as 1 maternal death per thousand live births. The best state record was the phenomenal rate of 0.4 reported for Oregon. While this rate is provisional, Oregon made an outstanding record in 1948. Three states—Connecticut, Nebraska and Utah—now hold second place, each with a rate of 0.6.

Minnesota had the lowest rate, 0.6, in 1947. The highest rate in 1948 was 2.7, for Mississippi. In 1947, the highest rate, 2.6, was reported for Mississippi, Alabama and South Carolina; the rate for the latter two states declined to 2.3 in 1948. Considering the differences in climate and racial composition, some students of vital statistics may consider the drop from 2.6 to 2.3 for Alabama and South Carolina an accomplishment as great as or greater, from the social point of view, than the reduction for Oregon from 0.9 in 1947 to 0.4 in 1948.

For thirty-seven states and the District of Columbia, the 1948 rates were at least as low as those reported in 1947; the decrease ranged from 0.1 to 0.8. In only eleven states were the rates higher in 1948, and the increases were small—0.1 to 0.4. The progress against maternal mortality in the United States continues to be general throughout the entire country.

Many other nations are also experiencing a considerable drop in their maternal mortality rates. Recently available figures indicate that New Zealand (whites only) experienced only 1.1 maternal deaths per thousand live births in 1947.[1] Probably a number of the European countries that have had outstanding health records in the past also have rates close to this. Obviously future decreases in the number of maternal deaths per thousand live births will be smaller. There are enough states in the United States with maternal mortality rates above 1.0, however, to anticipate some further decreases in the rates for individual states

The spread between the rates of the healthier countries continued to narrow.[2] As maternal mortality rates approach the level of 1.0, they will no longer be a gage for comparison of the health of nations. In fact, a spread of only 0.1 or 0.2 between the rates for any two nations may well be statistically insignificant; that is, the small differences may be due to errors in reporting the number of maternal deaths and live births.

Since 1933, the United States has made tremendous progress, with the rate declining from 6.2 to 1.2 in fifteen years; in 1947 the rates for whites and nonwhites were 4.5 (5.6-1.1) and 6.4 (9.7-3.3) lower than in 1933. The spread between the highest and lowest state rates decreased from 7.2 (11.5-4.3) in 1933 to 2.3

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[1] The official vital statistics reports for New Zealand feature the maternal mortality rate for whites; rarely is the rate for nonwhites given. The 1947 United States rates were 1.1 for whites only and 1.3 for all races; the nonwhite rate in 1947 was 3.3. The nonwhite rates for New Zealand do not appear in the most recent edition of the "New Zealand Official Year Book." If the over-all rate for New Zealand was actually lower in 1947 than for the United States, the difference could be attributed to a smaller proportion of nonwhites in New Zealand.

[2] Sweden, for example, was 3.1 below the United States rate in 1933 despite the fact that less than one fifth of the births were attended by physicians. Since the United States rate for 1948 was 1.2, the 1948 rate for Sweden, which is not now available, could not be more than 1.2 under the United States rate.

(2.7-0.4) in 1948. More important than the decline for the whole nation is the fact that the highest state rate in 1948 was 2.7, which was less than two thirds of the rate, 4.3, for the best state in 1933. To the extent that this one vital statistic can be considered an index of health, the charge that rapid improvement in health has been limited to the wealthier sections of the country is clearly and emphatically refuted.

Current Comment

AMERICAN MEDICAL ASSOCIATION'S STORY IN *LOOK* MAGAZINE

The story of the American Medical Association in the October 11 issue of *Look* magazine will reach millions of readers. The article offers a concise, instructive presentation of the work of the Association and of its program and achievements. A better understanding of American medicine and of what can be obtained under independent and nonpolitical medical effort will be had by those who read *Look's* story.

ESTROGENS AND CANCER

Numerous experiments have shown that estrogens exert a blastogenic effect in various species. Estrogens play an essential role in the development of cancer of the breast in male and female mice of cancer-susceptible strains. A similar response can be elicited in rats subjected to prolonged treatment with estrogens. In guinea pigs myofibroma of the uterus develops following estrogen medication. Administration of estrogens elicits leukemia and tumors of the testis in mice. However, the cancerigenic action of estrogens in man is still controversial although these drugs have been used extensively in medical practice. The normally high frequency of cancer of the breast in women makes difficult the determination of the relation between the development of mammary cancer in women and preceding treatment with estrogens. On the other hand, "spontaneous" cancer of the breast in men is relatively uncommon and its occurrence following prolonged and intensive contact with estrogens would be of definite significance. The fundamental conditions for the observation of such sequelae were created with the introduction of estrogen therapy for the control of cancer of the prostate. It is noteworthy, therefore, that during the last few years there has been a steadily increasing number of reports of the appearance of unilateral or bilateral cancer of the breast in male subjects who received large doses of estrogens over many months.[1] While the total number of instances so far published is not large, the appearance of such cancers has aroused the attention of investigators in this country and in Europe. Recent preliminary observations of male pharmaceutical workers engaged in the manufacture of estrogens provide additional evidence of a relation between estrogenic exposure and cancer of the breast.[2] In this country and abroad hyperplasia of the breasts has developed in male estrogen manufacturers, which creates an increased liability to subsequent cancerous reactions in these tissues. Although the evidence presently available may not be conclusive, it is sufficient to warrant caution in the medicinal and cosmetic use of estrogens, especially if these drugs are employed over long periods of time and in systemically effective doses.

BRUCELLOSIS

In this issue of The Journal (page 326) appears a report of the National Research Council on brucellosis. Since the condition comes to human beings through contact with infected animals, the public health problem has been the elimination of the disease from animals. The commission which considered the subject is convinced that the disease could not be controlled or eradicated until the carriers among animals were destroyed or restricted in their movements; thus far this has not been possible. A successful method of treatment for animals has not been developed. Apparently aureomycin is efficient in controlling brucellosis in human beings and may well be considered specific for that disease. A method of vaccination has not yet been developed against the occurrence of brucellosis in swine, goats, sheep or horses. The commission feels that five fundamental steps are required to control and eradicate the disease, including diagnosis of the infection, eradication of the infectious agent, elimination of the susceptible host by immunization, isolation of infected animals and the use of therapeutic measures. The costs of treatment of animals with aureomycin would be prohibitive, but the time may come when such methods of treatment may be available to veterinary physicians as they are to physicians who care for human beings. Many will remember that when penicillin was first introduced the costs were tremendous, but still these costs were not considered prohibitive in saving the life of a prize steer with pneumonia. The report of the commission of the National Research Council is a basic document which deserves consideration not only by all especially interested in the field but particularly by legislative bodies concerned with developing legislation to make the attack on the disease effective.

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[1] Auchincloss, H., and Haagensen, C. D.: Cancer of the Breast Possibly Induced by Estrogenic Substance, J. A. M. A. **114**: 1517-1523 (April 20) 1940.

[2] Fitzsimons, M. P.: Gynaecomastia in Stilboestrol Workers, Brit. J. Indust. Med. **1**: 235 (Oct.) 1944. Scarff, R. W., and Smith, C. P.: Proliferative and Other Lesions of Male Breast; Notes on 2 Cases of Proliferative Mastitis in Stilboestrol Workers, Brit. J. Surg. **29**:393 (April) 1942.

ORGANIZATION SECTION

Official Notes

ESTABLISH GEORGE MINOT LECTURESHIP

For years, officers of the Section on Experimental Medicine and Therapeutics have desired to honor, by establishing a "name lecture," an American investigator who has made an exceptional contribution to the development of clinical investigation and therapeutics. At the Interim Session of the Association in St. Louis last November, three officers of the section, Dwight L. Wilbur, San Francisco; Edgar van Nuys Allen, Rochester, Minn., and Carl V. Moore, St. Louis, suggested that immediate steps be taken to obtain approval of the idea from the Council on Scientific Assembly and that the lecture be named in honor of Dr. George Richard Minot, Boston, whose contributions to medical knowledge of the causes and methods of control of pernicious anemia have been recognized throughout the world. Both suggestions were unanimously supported by the executive committee of the section, and approval has been obtained from the Council on Scientific Assembly. A committe of former chairmen of the section—Drs. Allen, Walter Bauer, Boston, and Carl Dragstedt, Chicago—has been appointed to work out details. The first lecture will be given either at the 1950 or at the 1951 meeting.

Washington Letter

(From a Special Correspondent)

Sept. 26, 1949.

Pay Raises for Veterans Administration Doctors

Proceeding with almost unprecedented speed, the Senate Labor and Public Welfare Committee on September 21 approved a bill that provided for substantial salary increases to physicians, dentists and nurses in the Department of Medicine and Surgery, Veterans Administration. Action was taken only a few hours after a public hearing on the measure (HR 6022) had been held by the subcommittee on veterans legislation, of which Senator Claude Pepper is chairman. HR 6022 was passed by the House in August, and final enactment before adjournment of Congress now appears probable. Testimony in support was presented at the brief hearing by spokesmen for the Veterans Administration and the American Legion.

Philadelphia Teaching Hospitals Join Army in Novel Plan

The so-called Ravdin Plan, by which residents are utilized to relieve shortages of specialists at Army stations, has worked out so well in its first month of trial (September) that it may be extended soon, according to the Surgeon General's Office. Sponsor of the system is Dr. I. S. Ravdin, of University of Pennsylvania Hospital. Cooperating in the plan are heads of major departments at the teaching hospitals affiliated with Jefferson, Temple and Pennsylvania medical schools. Residents who volunteer are assigned for two months' duty at Army posts. The plan has received approval of the several American specialty boards involved to date. First Army stations to get the residents were Camp Knox and Camp Campbell in Kentucky.

U. S. Delegates Attend Radiation Conference

Appointment of eleven radiologists and physicists to represent this country at a three nation conference on radiation tolerances was announced by the Atomic Energy Commission a few days prior to the session, scheduled for September 29-30 at Chalk River, Ontario, Canada. The conference was planned under provisions of the Technical Cooperation Program of the United States, the United Kingdom and Canada, which does not include information on weapons. Establishment of uniform radiation tolerance standards was one of the main objectives.

United States delegates are: Dr. Shields Warren, director, and Dr. John Z. Bowers, deputy director, of the Atomic Energy Commission's Division of Biology and Medicine; Dr. G. Failla, professor of radiology at Columbia University, and Drs. Austin M. Brues, J. G. Hamilton, Louis Hempelmann, Wright Langham, Karl Z. Morgan, Herbert M. Parker, Lauriston S. Taylor and Bernard S. Wolf.

Agenda for Pan-American Meeting

Dr. Fred L. Soper, director of the Pan-American Sanitary Bureau, has disclosed the tentative agenda for the meeting of the Directing Council to be held in Lima, Peru, October 6-12. United States representatives at the meeting will include Dr. Thomas Parran, dean of the newly organized school of public health at the University of Pittsburgh; Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, and Dr. H. VanZile Hyde, member of the World Health Organization executive board.

Matters to come before the meeting include the Pan-American Sanitary Bureau budget and program for 1950, plans for construction of a headquarters building in Washington, annual observance of Pan-American Health Day, arrangements for a number of inter-American medical congresses and elections to three vacancies on the executive committee.

Hospital Managers' Training Institute

The Veterans Administration will conduct the first governmental interagency hospital managers' training institute October 3-21. Trainees will be assigned by the Army, Navy, Air Force, Public Health Service and Bureau of Indian Affairs, as well as the Veterans Administration. Lecturers and speakers will include Dr. Walter A. Bloedorn, dean of George Washington University School of Medicine; Dr. Warren Brown, associate dean of medicine at Baylor University; Dr. Paul R. Hawley, executive officer of Blue Cross and Blue Shield, and Dr. Perrin Long, Johns Hopkins University. The institute, which is to be held semiannually, is under the supervision of the Research and Education Service, headed by Dr. E. H. Cushing. Its primary aim is "to improve experienced administrators' knowledge of up-to-date personnel management practices and executive leadership."

Nine Institutions Receive New Cancer Grants

Grants in aid totaling $3,250,000 for assistance in construction of cancer research facilities were announced September 19 by the Federal Security Agency. Recipients are: University of Minnesota, $200,000, for two floors of clinical research at Mayo Memorial Medical Center; University of Chicago, $240,000, toward construction of the $2,000,000 Goldblatt Memorial Hospital for Cancer Research; New England Deaconess Hospital, $85,000, for an experimental detection center; University of Kansas, $200,000, for one wing of a two story building for laboratory and clinical research; Johns Hopkins University, $750,000, toward construction of cancer research facilities; St. Louis University, $625,000, for a clinical research building at the medical school; New York Memorial Hospital, $250,000, for a one floor addition to the experimental surgery laboratory;

University of California at Los Angeles, $700,000, for a laboratory research wing of the medical school, and University of Pennsylvania, $200,000, for a laboratory in the diagnostic clinic, which is being erected.

Conference on Veterans Hospitals

Persevering in his efforts to have the Veterans Administration proceed with a full scale hospital construction program, Senator Claude Pepper (Dem., Florida) presided at a special conference September 19 on possible means of ending the Administration's present retrenchment policy. Attending the executive session were Carl R. Gray Jr., administrator of veterans affairs; Fred A. McNamara, hospital expert of the United States Budget Bureau, and Representative John Rankin (Dem., Mississippi). The latter is chairman of the House Veterans Committee and, like Senator Pepper, has been attempting to have President Truman rescind his executive order of last January that the hospital construction program be reduced by 16,000 beds. No decisions were reached at the conference, but Capitol observers have no doubt that pressure will continue to be exerted on the White House, by veterans organizations as well as by many members of Congress, to modify the cutback order.

Number of Births Stays at 1948 Level

Public Health Service tabulations indicate that the number of live births in this country during the first six months of 1949 was approximately the same as for the corresponding period in 1948, but well below the 1947 figure. For 1949, it was 1,706,000; for 1948, the figure was 1,694,000, and for 1947, 1,865,881. Excluding armed forces overseas, the January-June rate this year is 23.1 per 1,000 population. For the comparable period last year the rate was 23.3. Surgeon General Leonard A. Scheele explained that, if unregistered births are included, the January-June figure for 1949 is estimated at 1,777,700, compared with 1,768,000 for the same period in 1948.

Dr. Wright Joins Schistosomiasis Group

Appointment of Dr. Willard H. Wright, of the National Institutes of Health, to membership on the Expert Committee on Schistosomiasis of the World Health Organization has been announced by the U. S. Public Health Service. The committee's first meeting is scheduled for October 24-29 in Cairo. Dr. Wright received the Legion of Merit for his work in World War II, while he was detailed to the Army, as an investigator of schistosomiasis problems in the Far East.

Emergency Care Unaffected by "Stop" Order

Suspension of payments from the United Mine Workers Welfare and Retirement Fund, which became effective September 17 as a result of diminishing revenues, does not apply to emergency hospital and medical services. The fund's trustees adopted a resolution which provides that payments for such services will continue to be made, "as determined by medical administrative officers of the Fund."

Report on Foreign Use of Radioisotopes

Since radioactive isotopes from the Oak Ridge "pile" became available in September 1947 for foreign distribution, 616 shipments have been made to 22 countries, according to the Atomic Energy Commission. All have been used in medical research and therapy and scientific investigations. Ninety per cent have been used in therapy or physiologic research.

Lynn Adams to Represent Mental Group in Washington

Lynn Adams has resigned as executive secretary of the Mental Hygiene Society of Maryland to become Washington representative of the National Committee for Mental Hygiene. His office is at the headquarters of the American Psychiatric Association.

Coming Medical Meetings

Annual Conference of State Secretaries and Editors, Chicago, A. M. A. Building, Nov. 3-4. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Academy of Pediatrics, San Francisco, Nov. 14-17. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Chicago, Palmer House, Oct. 13. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 5-7. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 6-9. Dr. Frederick J. Brady, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Life Insurance Medical Directors of America, New York, Hotel Statler, Oct. 13-14. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Nov. 10-12. Col. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Central Society for Clinical Research, Chicago, Drake Hotel, Nov. 4-5. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Pensacola, Fla., Oct. 6-7. Dr. Arthur J. Butt Jr., 1101 N. Palafox St., Pensacola, Fla., Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

International College of Surgeons, United States Chapter, Atlantic City, Haddon Hall, Nov. 7-12. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10, Secretary.

Inter-State Post Graduate Medical Association of North America (International Medical Assembly), Philadelphia, Oct. 31-Nov. 3. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 3-6. Dr. W. Merritt Ketchum, 630 Shukert Bldg., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 6-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

National Gastroenterological Association, Boston, Hotel Somerset, Oct. 24-26. Dr. Sigurd W. Johnsen, 1818 Broadway, New York 23, Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 30-Nov. 1. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Southern Medical Association, Cincinnati, Nov. 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southwestern Medical Association, Albuquerque, New Mexico, Nov. 9-12. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Texas, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder and Milwaukee Auditorium, Oct. 3-5. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15. Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

GOVERNMENT SERVICES

NAVY

ACTIVE DUTY WITH THE NAVAL AIR RESERVE TRAINING COMMAND

The Naval Air Reserve Training Command, with headquarters at Glenview, Ill., offers opportunities for active duty to inactive reserve medical officers and interested private physicians. Duty assignments are available at the following Naval Air Stations: Akron, Ohio; Atlanta, Ga.; Columbus, Ohio; Denver; Grosse Ile, Mich.; Lincoln, Neb.; Los Alamitos, Calif.; Niagara Falls, N. Y.; St. Louis; Spokane, Wash.; Willow Grove, Pa.; Jacksonville, Fla.; Minneapolis, and New Orleans. Those accepted for this duty will receive full base pay and allowances for subsistence and quarters commensurate with their rank; in addition, $100 per month will be paid to those who volunteer and agree to remain on active duty for a minimum of one year, as provided for by law. Moreover, qualified flight surgeons and aviation medical examiners will be issued orders to duty involving flying. Medical officers holding commissions in the Naval Reserve now on active duty may designate three stations in order of preference. Physicians who are not in the Naval Reserve may apply to their nearest Office of Naval Officer Procurement for information pertaining to securing a commission. Naval Reserve Medical Officers with the rank of lieutenant commander or below who wish to further their interest in aviation medicine may submit their request for the course given at the School of Aviation Medicine and Research, Naval Air Station, Pensacola, Fla. The request should include an agreement to remain on active duty for one year after completion of the course.

Inquiries should be directed to the Naval Air Reserve Training Command (Staff Medical Officer), Naval Air Station, Glenview, Ill., or to the Bureau of Medicine and Surgery (Division of Aviation Medicine), Navy Department, Washington 25, D. C.

SECOND ANNUAL SEMINAR

The second annual seminar in Military Medicine will be offered at the U. S. Naval Hospital, St. Albans, L. I., N. Y., Oct. 16-29, 1949. This course is intended to prepare students for duty in the event of a national emergency and to stimulate interest in the Naval Reserve. Lecturers will be chosen from the hospital staff and consultant physicians, Army and Navy medical departments. Medical officers of the Organized or Volunteer Reserve Corps may request two weeks' training duty with pay and allowances, including travel. Personnel having a claim pending for, or receiving, disability allowance, disability compensation or retired pay from the U. S. Government are not eligible for training duty with pay. Fourteen points toward the nondisability retirement plan will be credited each student.

COMMISSIONS IN THE NAVAL RESERVE

Because of the misinterpretation by some medical students concerning application for commissions in the Naval Medical Corps Reserve on graduation, as distinct and separate from the application for internship within Naval hospitals, the Surgeon General has forwarded the following statement:

> Any student in a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association, who meets the physical, citizenship and other requirements, may apply for a commission as Ensign, HP, U. S. Naval Reserve, at any time after his acceptance by such school. Those so appointed will be offered a subsequent appointment as Lieutenant, junior grade, Medical Corps Reserve, U. S. Naval Reserve, on graduation from an approved medical school. While it is not mandatory, it is desirable that those senior students who desire to apply for an internship in a Naval hospital, apply for a Reserve commission prior to the date of application for the internship in accord with the Cooperative Intern Placement Plan. This procedure will expedite the processing of applications for Naval internships in the one month period allowed under the Cooperative Intern Placement Plan. Selections for Naval internships will be made in accord with all provisions of the Cooperative Intern Placement Plan of the Association of American Medical Colleges, the details of which are available to the students through the dean of their medical school.

CAPT. JOEL J. WHITE RETIRES

Capt. Joel J. White, commanding officer, Naval Hospital of Chelsea, Mass., recently retired from active service in order to accept the medical directorship of the University of New Hampshire. As chief flight surgeon in the Surgeon General's Office he developed a carbon monoxide indicator which was considered the outstanding development in aviation in 1931. He performed outstanding services in World War I and World War II, and in the recent war he received the Navy Legion of Merit for actual combat in Guadalcanal. This citation entitled him to retire as rear admiral.

ADMIRAL BROWN APPOINTED INSPECTOR

Rear Admiral Clarence J. Brown (MC) has been appointed General Inspector of Medical Department Activities. He will also continue in his previous position of assistant chief of the Bureau of Medicine and Surgery for Research and Medical Military Specialties. Admiral Brown is a specialist certified by the American Board of Otolaryngology.

PERSONAL

Capt. James J. Sapero assumed his new duties as commanding officer, U. S. Naval Medical Research Unit 3, at Cairo, Egypt, succeeding Comdr. Robert A. Phillips, who became scientific director of the Research Unit.

Lieut. Comdr. Arthur V. Miller Jr., of Monroe, La., has been voluntarily recalled to active duty in the Medical Corps Reserve.

VETERANS ADMINISTRATION

INTER-AGENCY HOSPITAL MANAGERS INSTITUTE

The first governmental inter-agency hospital managers training institute will be conducted by the Veterans Administration October 3-21. Other participating agencies are the Department of the Army, Navy, Air Force, Public Health Service and the Indian Service. The institute will be held twice yearly, in February and October, and the program will be patterned after that which was conducted by the VA Department of Medicine and Surgery last February.

The training program is designed primarily to improve experienced administrators' knowledge of personnel management practices and executive leadership. The Training Division of the Personnel Relations and Training Service will lend technical assistance. The first phase of the program is the institute, which consists of lectures and study for three weeks. Immediately after the institute, the trainees are given two two-week assignments in hospitals managed by doctors with outstanding administrative ability. Finally, the trainees will be required, within six months after completion of the institute, to make trips to one or more hospitals in the vicinity of their own hospitals to keep abreast of good administrative technics. Each agency will select its participants in the program.

PERSONAL

Dr. Linus A. Zink has been appointed manager of the new Veterans Hospital in Brooklyn and Dr. Carleton Bates of the new hospital in Iron Mountain, Mich. Both are veterans of World War II.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Montana

Lemire, Rosaire E. Jr.	Missoula
Stainsby, Donald L.	Great Falls

Nevada

Hawley, Robert L.	Reno
Moore, George Leland	Elko

New Jersey

Alexander, James K.	Englewood
Allen, John Lewis	Ocean City
Beshlin, William V.	Paterson
Boone, Alexander W. Jr.	Pennsgrove
Browdy, Sol	Trenton
Cortelyou, Thomas P.	Princeton
Cozzarelli, James J.	Belleville
D'Alessandro, Genesio L.	Newark
Diorio, Carmine D.	Paterson
Fares, Louis G.	Trenton
Lyons, David R.	Newark
Mancusi-Ungaro, Alvin P.	Newark
Manowitz, Nelson	Jersey City
Miller, Thomas E.	Nutley
Sakson, John A.	Trenton
Sarno, John A.	Newark
Shapiro, Henry D.	Paterson
Specht, Robert C.	East Orange

New Mexico

Stevens, D. D.	Roswell

New York

Auringer, E. M.	Addison
Avery, R. F.	Brooklyn
Bader, Mortimer E.	New York
Bader, Richard A.	New York
Barker, Charles P.	New York
Bartholomew, L. G.	Whitehall
Bell, H. M. Jr.	Massena
Beller, Martin L.	New York
Bellwin, A.	New York
Blair, Edwin	Brooklyn
Blodgett, R. N.	Albion
Bowe, John Joseph	Bronx
Brodoff, Stanley	Bronx
Callas, Xenophen C.	Brooklyn
Cameron, Joseph J. Jr.	Brooklyn
Charlap, Myron	New York
Cheiker, A.	Brooklyn
Chiaramonte, Joseph T.	Brooklyn
Christenson, Paul J.	Troy
Clark, William J.	Scarsdale
Coddington, Arthur M. Jr.	Johnson City
Cohen, Clifford	Brooklyn
D'Angio, G. J.	New York
Dann, H. A.	New York
Dattoli, John A.	Poughkeepsie
Dawson, Walter L.	Bronxville
De Vito, Nicholas John	Forest Hills
Deyo, William B.	New York
Drachman, Stanley R.	New York
Dudasik, John J.	Brooklyn
Eby, Charles E.	New Rochelle
Edmonds, F. C. Jr.	Sea Cliff
Eisenbud, M.	New York
Emmel, R. C.	Mt. Vernon
Farrell, W. J.	Bronx
Feinberg, A. W.	Brooklyn
Ferber, Carl J.	Troy
Fisichella, R. A.	Brooklyn
Fitz, R. H.	Brooklyn
Fox, John R. Jr.	Rochester
Frankel, Jack	Jamaica
Freundlich, Martin	New York
Fretz, Alfred F.	Flushing
Friedman, C. R.	Brooklyn
Gahagan, Robert B.	Jackson Heights
Gelbard, David	New York
Gilbert, Seymour C.	New York
Graceffo, J. F.	Auburn
Greenwald, Joseph C.	New York
Griffiths, R. B.	Amsterdam
Haggerty, Thomas E.	Brooklyn
Haynes, Douglas M.	New York

New York—Continued

Henneman, Philip H.	Pelham
Herfort, Alan	New York
Hewitt, Gerald	Brooklyn
Hicks, Robert G.	New York
Holder, R.	New York
Hyams, George	Brooklyn
Jacobius, Henry F.	New York
Joy, Charles A.	Fredonia
Keil, Frank C.	New York
Kelley, Gurney E.	Syracuse
Kerwin, Kenneth J.	Staten Island
Kesseler, Howard J.	New York
Kohn, M. Jr.	Schenectady
Kohn, Robert M.	Buffalo
Komora, Edward J.,	Jackson Heights, L. I.
Lampert, H.	Brooklyn
Landman, M. E.	Forest Hills
Norton, James J.	Utica
O'Keeffe, D. F.	North Creek
Olsen, Robert Clarence	Brooklyn
Owre, E. S.	Staten Island
Palitz, S. F.	New York
Palumbo, V. A.	Brooklyn
Pannill, F. C. Jr.	New York
Pascale, Vincent H.	Bronxville
Siegman, Alfred J.	Brooklyn
Simson, J.	New York
Slowik, Rudolph F.	Utica
Wiggans, Roy G. Jr.	Ithaca
Wisoff, Carl P.	Neponsit
Wolkwitz, Robert E.	Brooklyn

North Carolina

Anderson, Robert H.	Wilson
Biles, Ervin W.	Charlotte
Bridger, Clarence E.	Winston-Salem
Clarke, James S.	Asheville
Dillard, Sam B.	Draper
Hallman, Bernard L.	Sanford
Highsmith, George P.	Dunn
Hubbell, David S.	Durham
Johnston, James W.	*Elon College*
Lee, Allen H.	Dunn
McIntosh, Archibald N.	Durham
Marks, Edgar S.	Greensboro
Nicholson, Neil G. Jr.	Rockingham
Phifer, William H.	Monroe
Shugart, Richard T.	Elkin
Suiter, Thomas B. Jr.	Rocky Mountain

North Dakota

McDonald, William J.	Bismarck
Nordquist, Paul W.	Fargo
O'Brien, J. C.	Dickinson
Pile, D. F.	Mandan
Sommerness, M. D.	Columbus
Sterns, Donald	Grand Forks

Ohio

Anderson, Rupert F. Jr.	Gambier
Apel, Otto F.	Portsmouth
Bennett, Albert R.	Columbus
Bond, William H.	Columbus
Bradford, G. T.	Cleveland
Brant, C. H.	Lakewood
Clapper, Henry H.	Akron
Clark, S. G.	Columbus
Clemente, Bartholomew	Columbus
Cope, Jerome A.	Ravenna
Davis, E. C. Jr.	Dover
Davis, William M.	Akron
Di Salvo, Remo J.	Cincinnati
Dzurik, Frank J.	Cleveland
Emslie, R. J.	Cleveland
Farrell, Robert X.	Springfield
Feigert, Marion W.	Van Wert
Finck, S.	Cleveland
Fishman, Stanley I.	Cincinnati
Fouke, A. E.	Fremont
Franklin, John W. Jr.	Chillicothe
Fry, G. D.	Youngstown
Fuhs, J. C.	Cincinnati

Ohio—Continued

Gallagher, Robert T.	Akron
Geiger, Paul E.	Toledo
Gorbach, A. C. Jr.	Vermillion
Guyselman, H. L.	Urbana
Hagans, James A.	Cincinnati
Hans, C. L.	Cincinnati
Haynes, E. R.	Newark
Heppl, John A.	Cleveland
Herman, R. J.	Toledo
Hodges, W. H. Jr.	Columbus
Hudec, John A.	Cleveland
Huston, Talmadge R.	Carey
Jackson, Charles E.	Dayton
Kilduff, James F. Jr.	Cleveland
Kosar, Joseph	Medina
Lammers, G. P.	Leipsic
Lefevre, J. D.	Springfield
Lilly, John S.	London
McGarry, John F.	Wickliffe
Manthey, C. E.	Cleveland Heights
McGrew, C. A.	Canal Fulton
McKitrick, Charles J.	Cambridge
Masters, Francis Wynne	Cleveland
Maurer, Frederic G. Jr.	Lima
Minnig, Donald I.	Akron
Mockbee, Charles W.	Cincinnati
Morey, Gordon R.	Cincinnati
Mulvaney, William P. Jr.	Cincinnati
Murphy, W. W.	Kent
Palay, S. L.	Cleveland
Pampush, James J.	Lakewood
Rauch, Robert F.	Lancaster
Reagan, Edgar Joseph	Dayton
Roberts, D. A.	Dayton
Rogers, S. I.	Youngstown
Rosenblum, A. M. Jr.	Youngstown
Rubenstein, Eli	Cincinnati
Sampsel, James W.	Cleveland
Shaw, William E.	Cincinnati
Spyker, Thomas Hugh	Columbus
Swanson, Gerald W.	Columbus
Swartz, William T.	Cincinnati
Taylor, James A.	Bellefontaine
Van Noate, H. F.	Doylestown
Walkowiak, John E.	Cleveland
Wemmer, Keith S.	Toledo

Washington

Cox, Russell L.	Seattle
Decker, John P.	Spokane
Hemmen, John E.	Seattle
Keizur, Lowell W.	Longview
Krippaehne, William W.	Puyallup
LaJoie, William J.	Spokane
Levin, Floyd D.	Walla Walla
Mills, Albert V.	Bremerton

West Virginia

Berman, Ralph E.	Beckley
Mathias, James D.	Mathias
Potterfield, Thomas G.	Charleston
Stansbury, Fred Jr.	Beckley

Wyoming

Tebbet, R. D.	Torrington

Canal Zone

Shrapnel, B. C.	Armuella
Stevenson, G. M.	Ancon

Hawaii

Craig, R. L.	Honolulu
Thorup, Oscar A. Jr.	Honolulu

Puerto Rico

Hoyos-Napoleoni, Hector A.	Ponce
Yordan, E.	Ponce

Canada

Sacharoff, M.	Windsor

Wales

Fredman, R.	Cardiff

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

Postgraduate Course in Pediatrics.—The University of Arkansas School of Medicine, Little Rock, will present a postgraduate pediatric course on October 31 and November 1. Physicians, public health nurses and workers are invited to attend. Guest speakers will be Dr. Herbert C. Miller Jr., University of Kansas School of Medicine, Lawrence-Kansas City, and Dr. Harry Bakwin, New York University School of Medicine, New York. No fees will be charged.

CALIFORNIA

Symposium on Heart Disease.—The annual postgraduate symposium on heart disease presented by the Heart Division of the San Francisco Tuberculosis Association will be held at the St. Francis Hotel in San Francisco October 12-15. Dr. William Dock, Brooklyn, and Dr. Arnold R. Rich, Baltimore, will be the guest speakers. Two concurrent courses in electrocardiography, to be given the morning of October 12, have been added to the program this year; one is an elementary course and the other an advanced course. The Wednesday afternoon session is planned for pediatricians and will be sponsored by the American Academy of Pediatrics.

Consultative Tumor Clinic.—The University of Southern California School of Dentistry, Los Angeles, has opened its first Tumor Consultative Board and Clinic to provide a consultative service which any member of the dental or medical profession may attend with or without a patient for oral tumor diagnosis. Meetings will be held on Fridays from 9 to 11 a. m. at the Clinic Building, Sixteenth and Los Angeles Streets. The professional service is made available by the school of dentistry faculty with the cooperation of the U. S. Public Health Service and the American Cancer Society. Inquiries or appointments for patients should be directed to Miss Shirley J. Carson, Secretary, 122 East Sixteenth Street, Los Angeles.

COLORADO

Courses in Poliomyelitis.—Aided by a grant from the National Foundation for Infantile Paralysis, the University of Colorado Medical Center is continuing to offer to physicians a series of postgraduate courses on poliomyelitis. Emphasis will be placed on the comprehensive care of patients in an epidemic. The courses are open to physicians who are graduates of medical schools approved by the American Medical Association and who reside in states west of the Mississippi. Three one-week courses are scheduled: November 7-11, 1949; March 13-18, 1950, and May 22-27, 1950. For information, address the Director of Poliomyelitis Teaching Program, University of Colorado Medical Center, Denver.

DISTRICT OF COLUMBIA

Annual Scientific Meeting.—The annual scientific assembly of the Medical Society of the District of Columbia will hold its annual meeting at the Hotel Statler October 17-19. The program includes the following speakers:

Paul D. White, Boston, Etiology of Coronary Heart Disease.
George E. Burch, New Orleans, Management of Congestive Heart Failure.
Samuel Bellet, Philadelphia, Treatment of Cardiac Arrhythmias.
Robert R. Linton, Boston, Diseases of the Veins of the Lower Extremities and Their Treatment.
Edward A. Gall, Cincinnati, What Is Early Cancer?
Freddy Homburger, Boston, Modern Aspects of the Physiopathology of Cancer.
Elise Strang L'Espérance, New York, Detection and Prevention of Early Cancer.
Richard H. Chamberlain, Philadelphia, Radiotherapy in Treatment of Cancer.
Lawson Wilkins, Baltimore, Diagnosis and Management of Hypothyroidism in Childhood.
Jean Paul Pratt, Detroit, Use and Abuse of Estrogens.
John E. Howard, Baltimore, Male Hormone Deficiencies and Treatment.
Arthur J. Patek Jr., New York, Present Day Trends in the Treatment of Laennec's Cirrhosis.
Bruce K. Wiseman, Columbus, Ohio, Hypersplenism.
Charles G. Child III, New York, New Concepts in Surgery of the Pancreas.

FLORIDA

District Meetings. — The annual meetings of the Florida medical districts will be held October 24-28 in a city of each of the four districts. The Northwest Medical District meeting will be held in Quincy at the Swano Country Club. Dr. Edwin H. Andrews, Gainesville, has been invited to speak on "Consideration of the Pancreas in the Diagnosis of Upper Abdominal Diseases." The Northeast Medical District will meet October 26 at the Elks' Club in Palatka. The Southwest Medical District members, meeting October 27 at the Sebring Hotel, Sebring, will hear, among others, Dr. Garland M. Johnson, Fort Lauderdale, speaking by invitation on "The Toxic Effect of Tetra-Ethyl Pyrophosphate." At the Southeast Medical District meeting in Fort Lauderdale October 28 at the Trade Winds Hotel, Dr. Henry Fuller, Lakeland, has been invited to speak on "Observations on Digitoxin." All programs begin at 2:30 p. m. and are to be concluded with a dinner meeting.

ILLINOIS

Lectures on Ophthalmology and Otolaryngology.—The next meeting of the Central Illinois Society of Ophthalmology and Otolaryngology will be held at the Abraham Lincoln Hotel in Springfield, November 18-20. Dr. William L. Benedict, Rochester, Minn., will give lectures on "General Diseases: Ocular Manifestations" and "Tumors of the Eye and Orbit." Dr. Howard P. House, Los Angeles, will speak on "Indications and End Results of Fenestration Surgery," "Management of Otitis Media" and "Management of the Continually Stuffy Nose." Dr. Walter E. Owen, Peoria, a member of the society, will speak on: "Drug Therapy in Respiratory Allergy." Dr. Herbert R. Kobes, Springfield, will speak on the "State of Illinois Cooperates with the Ophthalmologist and Otolaryngologist."

Chicago

Wilder Memorial Lecture.—The fourth William Hamlin Wilder Memorial Lecture of the Institute of Medicine of Chicago will be delivered by Dr. Arthur J. Bedell, professor emeritus of ophthalmology, Albany (N. Y.) Medical College, at a joint meeting with the Chicago Ophthalmological Society October 14 at 8 p. m. in the Crystal Room of the Palmer House. The subject will be "Medical Ophthalmology: A Kodachrome Demonstration of Photographs of the Fundus in Diabetes, Hypertension, Nephritis, Optic Neuritis, and Choked Disk."

Heart Association Meeting.—The Chicago Heart Association will hold a clinical session in the Abbott Memorial Amphitheatre at Evanston Hospital, Evanston, October 13 from 10 a. m. to 12 noon. Subjects under discussion include "Treatment of Uremia by Dialysis Across the Intestinal Mucosa," "Hypertension and Effort in Cardiac Rupture Following Acute Myocardial Infarction," "Angiocardiography in the Adult" and "The Flow Property of Blood." The meeting will close with a clinicopathologic conference. All physicians are invited to attend.

University Appointments.—Dr. Aldo A. Luisada, instructor of physiology and pharmacology and lecturer in medicine at Tufts College Medical School, Boston, has been appointed to the staff of the Chicago Medical School as assistant professor of medicine and program director of cardiology. Dr. Luisada is a graduate of the Royal University of Florence Medical School and has held a number of professional posts in Italian universities and in the United States.——Dr. Nicolas Stefan Halmi, refugee Hungarian scientist, has been appointed instructor in anatomy at the University of Chicago. Dr. Halmi was on the faculty of medicine of the University at Pecs, Hungary, September 1947 to January 1949. He received his M.D. degree from the Peter Pázmány University in Budapest, 1947.

Lectures on Community Health. — A series of lectures sponsored by the University of Chicago will be presented on Tuesdays at 7:30 p. m. at the Woodrow Wilson Room, 116 South Michigan Avenue, on "Current Problems in Community Health." The program is as follows:

October 4, Voluntary Health Insurance Plans, Mr. George Cooley, American Medical Association.
October 18, General Principles Underlying Welfare Effort, Ernest E. Irons, President, American Medical Association.
October 25, Compulsory Health Insurance Plans, Alton A. Linford, Ph.D., University of Chicago.
Nov. 1, The Chicago and Cook County Health Survey: What Chicago is Doing, Mr. Robert E. Merriam.
Nov. 15, Industrial Health Program in Illinois, Frederick W. Slobe, Chicago Medical Society.
Nov. 29, Mental Hygiene Program in Illinois, Mr. Fred H. Hoehler, Department of Public Welfare, State of Illinois.
Dec. 6, The World Health Organization, Mrs. Louise L. Wright, Chicago Council on Foreign Relations.

A ticket for the series may be obtained for $4, single admission, 75c.

KANSAS

City Park Named for Veteran Doctor.—Over 1,000 residents of Northwest Kansas, Eastern Colorado and Southwestern Nebraska attended ceremonies August 28 dedicating Gulick Park in Goodland in honor of Dr. Arthur C. Gulick, physician in that city for nearly half a century. A number of speakers expressed the high esteem in which the doctor is held by his neighbors and friends. A radio phonograph equipped for television was presented to the doctor and his wife.

LOUISIANA

Legal Medicine Program Established.—A law-science program has been established at Tulane University of Louisiana, New Orleans, to bring about an effective integration between the fields of law and medicine on the graduate and undergraduate levels. Dr. Hubert Winston Smith, former professor of legal medicine at the University of Illinois, Chicago, has been named research professor of law and medicine. He will serve also as professor of law and professor of legal medicine in the college of law and school of medicine, respectively. New courses and seminars will be devoted to more complete training of trial lawyers in the science of proof and of handling personal injury litigation and in legal psychiatry. Long range plans call for projected developments in clinical legal medicine, legal pathology and scientific crime prevention and detection. A course in legal medicine has been established. It is planned also to offer a course in medicolegal aspects of behavior problems.

During the past few years Dr. Smith has been doing research with other specialists in reformulating medical sciences in terms of their legal applications and utility. The result has been publication of more than one hundred and twenty-five studies, in both medical and legal journals. During World War II Dr. Smith served as officer in charge of the legal medicine branch, Bureau of Medicine and Surgery, U. S. Navy.

MICHIGAN

Kresge Research Fund.—Wayne University College of Medicine, Detroit, has been granted $113,850 by the Kresge Foundation which will be known as the Kresge Research Fund. The grant, which is payable in installments of $37,950 over a three year period, is to be used for the study of revascularizing ischemic limbs and the study of the physiologic, anatomic and surgical possibilities of this technic. Drs. Charles G. Johnston and Prescott Jordan Jr., of the college faculty, are reported to have recently performed successfully an operation in which arteries were sutured into veins. Drs. John E. Webster, Elisha S. Gurdjian and Gordan H. Scott, Ph.D., are working with Drs. Johnston and Jordan in the investigation. This research will be carried on at the Wayne University College of Medicine, the City of Detroit Receiving Hospital and Grace Hospital. The Board of Education accepted the grant on August 23 on behalf of the medical school.

MONTANA

State Medical Election.—The Montana State Medical Association in July chose Dr. Clyde H. Frederickson, Missoula, as president-elect and installed Dr. Thomas F. Walker, Great Falls, as president. Dr. Herbert T. Caraway, Billings, was reelected secretary-treasurer.

NEW YORK

Postgraduate Lectures.—The Schenectady County Medical Society at the Eastern New York Orthopedic Hospital, Schenectady, October 4 at 8:30 p. m., will be addressed by Dr. Paul Reznikoff of New York on "Blood Dyscrasia Produced by Industrial Exposures." The Geneva Academy of Medicine will hear Dr. Arthur M. Reich, Scarsdale, speak on "The Treatment of Obstetrical Bleeding" at a meeting October 17 at 8:30 p. m. at the Bellhurst, Geneva. These lectures have been arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

New York City

Graduate Fortnight.—The New York Academy of Medicine will hold its twenty-second Graduate Fortnight October 10-21. These evening lectures at the Academy of Medicine Building begin at 8:30 p. m. Among the subjects to be discussed are present and prospective diagnostic uses of radioactive isotopes, electrolytes and electrocardiography, cardiac and renal disorders, liver disease, hematologic disorders, diagnostic cell-staining reactions, gastroenterologic disorders, neuropsychiatric disorders and bacterial and virus infections.

Appoint Executive Secretary of County Society.—Mr. Robert D. Potter of Scarborough-on-Hudson has been appointed as the new executive secretary of the Medical Society of the County of New York and editor of its journal, *New York Medicine*. Mr. Potter was executive director of the recent International Congress on Rheumatic Diseases. He has also been science editor of the *N. Y. Herald Tribune* and news editor of Science Service syndicate. He was a founder member of the National Association of Science Writers and has twice served as president of the organization.

Lectures for Laymen.—The New York Academy of Medicine Lectures to the Laity on "Frontiers in Medicine" began September 28 and will extend through January 25. They are held at the Academy of Medicine Building, 2 East 103 Street at 8:30 p. m. and will be broadcast by radio. Admission is free. The program is as follows:

Oct. 26, David Seegal, New York, Methuselah—Myth or Promise.

Nov. 16, Laurence H. Snyder, Sc.D., Oklahoma City, Anniversary Discourse of the Academy, Frontiers in Genetics.

Dec. 7, John H. Gibbon Jr., Philadelphia, Machines That Work Like Men.

Jan. 11, Selman A. Waksman, Ph.D., New Brunswick, N. J., Biology of the Antibiotics.

Jan. 25, Thomas M. Rivers, New York, The George R. Seidenburg Memorial Lecture, Concepts and Methods of Medical Research.

The lectures will be published by and copies may be purchased from the Columbia University Press, Columbia University, New York 27.

Venereal Disease Seminars.—A series of twelve weekly lectures and demonstrations on the diagnosis, treatment and management of venereal diseases will start at the New York City Department of Health October 8 at 10:30 a. m. in the second floor auditorium of the Health Department, 125 Worth Street. The schedule of lectures includes:

Oct. 8, Dr. Walter P. Anderton, Columbia University College of Physicians and Surgeons, The Medical Practitioner and Venereal Disease.

Oct. 15, Richard C. Arnold, Venereal Disease Research Laboratory, U. S. Public Health Service, Current Developments in the Treatment of Syphilis.

Oct. 22, Aaron Prigot, Harlem Hospital, Aureomycin in Venereal Disease.

Oct. 29, Frank C. Combes, New York University-Bellevue Medical School, Primary Syphilis.

Nov. 5, Royal M. Montgomery, New York Polyclinic Medical School and Hospital, Skin Lesions of Syphilis and Their Differential Diagnosis.

Nov. 12, Borris A. Kornblith, Gouverneur Hospital, Chancroid, Lymphogranuloma Venereum and Granuloma Inguinale.

Nov. 19, Edwin P. Maynard Jr., Long Island College of Medicine, Heart Disease and Syphilis in the General Practitioner's Office.

Nov. 26, Bernhard Dattner, Bellevue Hospital, Syphilis of the Central Nervous System.

Dec. 3, Charles R. Rein, New York University Bellevue Medical Center, Serodiagnosis of Syphilis.

Dec. 10, Hortense Hilbert, R.N., The Public Health Nurses' Role in the General Practitioner's Approach to Venereal Disease.

Dec. 17, Mortimer D. Speiser, New York University Medical School, The Syphilitic Pregnant Woman and Her Expected Child.

At a special meeting December 2, J. W. Richter, D.D.S., will speak on "The Oral Manifestations of Syphilis and Their Differential Diagnosis, of Interest to Medical and Dental Practitioners."

OHIO

Hoyt Memorial Loan Fund.—A memorial loan fund for medical students of orthopedics is to be established in Akron in honor of the late Dr. Walter A. Hoyt, former orthopedic surgeon on the staffs of City and Children's hospitals in Akron. Resident doctors at the two hospitals may use the fund for further study at the University of Pennsylvania, Philadelphia.

Hospital Lecture.—Dr. Leo G. Rigler, professor of radiology at the University of Minnesota Medical School, Minneapolis, will deliver the Annual Lectureship of Mount Sinai Hospital, Cleveland, in the Auditorium of the Residence Hall of the hospital October 6 at 8:30 p. m. on "Early Diagnosis of Carcinoma of the Lung." Dr. Rigler will hold a clinic at 3:15 p. m. This meeting is open to the medical profession.

PENNSYLVANIA

Environmental Cancer Study.—The Pennsylvania Department of Health will conduct a study of environmental cancer in Pennsylvania industry. It will include a statistical study and an environmental evaluation of all male cancer deaths which occurred in the general population of Pennsylvania during 1948 and a determination of the relative incidence of cancer in the various industries in the state. Dr. James D. Purvis has been named chief of the environmental cancer section, which has been established in the Bureau of Industrial Hygiene.

GENERAL

Wins Midwest Chemistry Award.—Robert D. Coghill, Ph.D., director of research, Abbott Laboratories, North Chicago, is the recipient of the 1949 Midwest Award of the St. Louis Section of the American Chemical Society, which will be presented at a dinner meeting in St. Louis October 3. The award is in recognition of "meritorious contribution to the advancement of pure or applied chemistry or chemical education" in his work in the development of large scale penicillin production technics.

Communicable Disease Report.—The U. S. Public Health Service announced September 14 that North Dakota had reported 6 cases of infectious encephalitis for the week ended September 10 as compared with 16 the previous week, and South Dakota reported 5 cases as compared with 1 the previous week. One hundred and fourteen cases of typhoid and paratyphoid fever were reported. The total to date is 2,602, as compared with 2,460 for the same period in 1948, which was a record low for the period. One case of smallpox was reported during the week in Kentucky.

International Medical Assembly.—The Interstate Postgraduate Medical Association of North America will hold its International Medical Assembly in the Public Auditorium, Philadelphia, October 31-November 1 under the presidency of Dr. Evarts A. Graham, St. Louis. Scientific papers and diagnostic clinics will be presented, beginning at 8:30 a. m. and extending into the evening. The award of the association's Medallion of Honor to Dr. Chevalier Jackson, honorary professor of bronchoesophagology at Temple University School of Medicine, Philadelphia, will be made Thursday afternoon. Technical and commercial exhibits will be displayed.

Clinical Pathologists Meeting.—The American Society of Clinical Pathologists will hold its annual meeting and seminar at the Drake Hotel, Chicago, October 12-15, under the presidency of Dr. O. A. Brines, Detroit. Those delivering papers by invitation include:

George Y. Shinowara, Ph.D., Columbus, Ohio, Prothrombin Level of Human Plasma.
Lester D. Odell, Chicago, Factors Affecting the Activity of Beta Glucuronidase in Gynecologic Tissues and Fluids.
Harold L. Stewart, Bethesda, Md., Pathology of Chemical Carcinogenesis.
Ross L. Gauld, Washington, D. C., Diagnosis of Viral and Rickettsial Diseases by Hospital Laboratory.
Henry Pinkerton, St. Louis, Morphology of Viral Inclusion Bodies and Their Practical Value in the Diagnosis of Viral Diseases.
James H. Peers, Bethesda, Md., Isoallergic Encephalitis and Its Possible Relation to Human Disease.

The Ward Burdick Award contribution will be given by Dr. Shields Warren, Boston, on the "Clinical Pathologist in the Atomic Age." On Wednesday at 9 a. m. there will be a panel discussion on Training of Residents, under the chairmanship of Dr. Frank W. Hartman, Detroit, sponsored by the society, the American Board of Pathology and the College of American Pathologists. In the afternoon there will be a symposium on "Methods for the Determination of Blood Sugar."

Lloyd Miller to Head U. S. P. Revision.—The U. S. Pharmacopeial Board of Trustees on September 17 elected Lloyd C. Miller, Ph.D., Rensselaer, N. Y., as director of pharmacopeial revision for the new decade, which will follow the meeting of the U. S. Pharmacopeial Convention in Washington in May, 1950. He will succeed the retiring chairman Dr. E. Fullerton Cook, who has been associated with the U. S. P. since 1901 and has served as chairman since 1920. Dr. Miller has been a member of the U. S. P. Revision Committee since 1944 and became chairman of the Subcommittee on Biologic Assays in 1946. A native of Illinois, Dr. Miller received his Ph.D. from the University of Rochester (N. Y.) School of Medicine and Dentistry in 1933 with a major in biochemistry. He was a research fellow at the Upjohn Company, serving in biochemistry, from 1935 to 1943. He worked with the Division of Pharmacology, U. S. Food and Drug Administration. Since 1944, following one year with the Winthrop Chemical Company, he has been director, Biology Division, Sterling-Winthrop Research Institute, Rensselaer, N. Y. His contact with U. S. P. activities embraces the U. S. P. XI, XII, XIII and XIV. The Ebert Prize of the American Pharmaceutical Association was awarded him in 1940 for research on the assay of digitalis. He is the author or co-author of many scientific papers on pharmaceutic research and has recently been appointed associate editor of the *Journal of Pharmacology and Experimental Therapeutics.*

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

	Week Ended			Jan. 1 to		Total *	
Division and State	Sept. 17, 1949	Sept. 18, 1948	Median Expec.	Sept. 17, 1949	Sept. 18, 1948	March 19 to Sept. 17, 1949	March 20 to Sept. 18, 1948
New England States:							
Maine	50	1	2	358	29	358	29
New Hampshire	16	1	3	147	14	147	14
Vermont	12	..	..	90	15	88	14
Massachusetts	165	16	33	1,241	127	1,241	124
Rhode Island	17	1	1	94	2	94	2
Connecticut	56	5	12	390	74	387	73
Middle Atlantic States:							
New York	354	115	129	3,803	811	3,783	775
New Jersey	127	71	54	935	442	899	435
Pennsylvania	64	74	74	488	436	478	425
East North Central States:							
Ohio	146	149	118	1,216	767	1,210	758
Indiana	68	42	29	821	271	811	261
Illinois	196	99	99	2,191	615	2,175	608
Michigan	208	71	71	1,987†	397	1,967†	391
Wisconsin	64	46	39	662	284	648	284
West North Central States:							
Minnesota	150	115	40	1,357	673	1,318	665
Iowa	52	90	42	820	552	807	539
Missouri	60	28	24	1,053	178	1,042	178
North Dakota	35	12	5	399	85	395	85
South Dakota	23	55	1	271	158	249	158
Nebraska	46	60	18	401	421	388	416
Kansas	51	32	9	545	201	519	198
South Atlantic States:							
Delaware	3	8	6	38	112	36	111
Maryland	3	11	8	123†	50	114†	49
District of Columbia	8	12	5	67	85	66	85
Virginia	26	41	19	237	376	227	374
West Virginia	18	10	10	272	116	265	111
North Carolina	10	75	15	173	2,082	146	2,058
South Carolina	9	17	2	81	295	68	287
Georgia	8	7	5	143†	170	135†	169
Florida	14	10	10	181	195	160	178
East South Central States:							
Kentucky	32	11	11	426	142	418	139
Tennessee	27	38	12	398	267	392	260
Alabama	17	13	5	188	154	175	142
Mississippi	11	15	3	259	114	248	112
West South Central States:							
	25	12	5	819	114	808	112
	22	7	6	180	100	168	94
	50	19	11	1,007	290	1,000	284
Texas	52	42	10	1,786	1,407	1,695	1,386
Mountain States:							
Montana	7	2	3	53	43	52	33
Idaho	21	4	3	345	90	332	63
Wyoming	7	4	1	83	65	83	65
Colorado	54	7	7	459	76	457	74
New Mexico	16	4	4	131	56	130	54
Arizona	1	11	2	113	92	102	91
Utah	18	11	7	140	50	124	47
Nevada	..	..	..	11	3	11	2
Pacific States:							
Washington	39	19	19	381	156	336	138
Oregon	27	20	12	150	93	134	82
California	127	326	46	1,566	2,672	1,277	2,640
Total	2,612	1,839	.....	29,079†	16,022	28,163†	15,672
Median, 1944-1948	.....	.....	1,440	12,412		12,149	

* Last two columns show reported incidence since approximate average seasonal low: 26 weeks.

† Corrections (made in cumulative totals): Deductions, week ended September 10: Michigan 1 case, Georgia 3 cases. Additions: Maryland—4 cases July onset, 6 cases August onset. Weeks not specified.

LATIN AMERICA

Congress on Hygiene and Social Medicine.—The First Inter-American Congress and Second National Congress of Hygiene and Social Medicine will be held October 21-25 at Santa Fe City, Argentina, under the auspices of the Ministery of Public Health of Argentina and the Oficina Sanataria Panamericana. The program includes: Hernan Romero and Lorenzo García, "Standards for Preparation of Hygienists and Assistants in Sanitation," Miguel E. Bustamante and Antonio Velasco, "Technical Fundamentals and Administration of Centers of Health"; Fred L. Soper and Carlos A. Alvarado, "Campaign Against Insects, Vectors of Diseases"; Mollie Ray Carroll and Germinal Rodríguez, "Medico-Social Aspects of Social Insurance"; Dr. Francisco Pataro, "Absentism, in Industrial Hygiene," and Ramon Carrillo and Teófilo De Almeida, "General Principles of Architecture of Hospitals." Further information can be obtained from Dr. Luis M. Barreiro, General Secretary, San Jeronimo 1976, Santa Fe, Argentina, S. A.

Deaths

Gustavus Maximillian Blech ⊕ Chicago; born in Riga, Latvia, Nov. 28, 1870; Barnes Medical College, St. Louis, 1894; veteran of the Spanish-American War; joined the Illinois National Guard and in 1913 organized the first Illinois field hospital, with which he served on the Mexican border in 1916; in 1917 served overseas as assistant division surgeon of the thirty-third division; commanded a hospital at Autun, France, and later was in charge of base hospital 208 at Bordeaux; discharged with the rank of colonel in 1919; in 1922 commissioned as colonel, medical reserve corps; member of the Association of Military Surgeons of the United States; past president of the Association of Military Surgeons of Illinois; honorary member of the Mexican Association of Military Surgeons; among the military and professional honors he received were the Legion of Honor from the Republic of France, the Grand Cross and Star, Order of St. Stanislaus by Czar Nicholas II of Imperial Russia, in recognition of suggestions for improvement of the Russian medical service when a Red Cross observer in 1904, on the Russian Japanese front; Commander, Order of St. George by the Kingdom of Belgium and Grand Cross and Star, Order of St. George; formerly professor of clinical surgery at Loyola University School of Medicine; consulting surgeon at the Cook County and Wesley Memorial hospitals; attending surgeon at the Edgewater Hospital; co-author with Col. Cornell C. Lynch of a volume entitled "Medical Tactics and Logistics"; in 1940 received the military surgeon's medal from the Mexican Ministry of National Defense; died August 9, aged 78, of coronary thrombosis, arteriosclerosis and cholelithiasis.

Hillyer Rudisill Jr. ⊕ Charleston, S. C.; born in Macon, Ga., Feb. 28, 1902; Jefferson Medical College of Philadelphia, 1924; at one time instructor in radiology at the University of Chicago; part time associate professor of radiology at the Medical College of the State of South Carolina, which he joined as professor of radiology and electrotherapy, resigning in 1939 to accept a position as radiologist to Piedmont Hospital in Atlanta; served on the faculty of the University of Tennessee College of Medicine in Memphis, where he was on the staff of John Gaston Hospital; specialist certified by the American Board of Radiology; fellow of the American College of Physicians; member of the American Roentgen Ray Society and the American College of Radiology; for many years affiliated with the Roper Hospital; died July 27, aged 47, of coronary thrombosis.

J. Clifford Wallace, Fort Wayne, Ind.; born in Fort Wayne, Oct. 21, 1875; Fort Wayne College of Medicine, 1898; Rush Medical College, Chicago, 1900; member of the American Medical Association; formerly on the faculty of Fort Wayne College of Medicine; served on the city board of health and as school physician; an examiner for the Marine Corps for many years; on the examining boards during World Wars I and II; on the staffs of Lutheran and Methodist hospitals; member of the executive board of the Fort Wayne Medical Laboratory; died in St. Joseph's Hospital July 13, aged 73, of cardiovascular renal disease with hypertension.

Justin Orphus York, Santa Ana, Calif.; born in Panhandle, Texas, July 28, 1911; Louisiana University School of Medicine, New Orleans, 1940; served an internship and residency at Charity Hospital in New Orleans; entered the medical corps of the U. S. Naval Reserve in 1942 and served in the Pacific theater of operations until 1946; in March 1948 began active duty as a lieutenant commander in the medical corps of the U. S. Naval Reserve, assigned to U. S. Naval Hospital, Long Beach; died July 4, aged 37, of injuries received in an automobile accident.

James Greenwood ⊕ Houston, Texas; University of Texas School of Medicine, Galveston, 1901; emeritus professor of neuropsychiatry at the Baylor University College of Medicine, where he was professor and chairman of the department of neuropsychiatry; past president of the Texas Neurological Society; member of the American Psychiatric Association and the Southern Psychiatric Association; medical director of Dr. Greenwood's Sanitarium; died August 22, aged 71, of arteriosclerotic cardiovascular disease.

Virginia Margaret Alexander ⊕ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1925; formerly medical adviser to Howard University in Washington, D. C.; during World War II served as a representative of the U. S. Public Health Service with the bituminous coal miners in Alabama; died in the University of Pennsylvania Hospital July 24, aged 50, of lobar pneumonia.

George Arthur Alliband ⊕ Atlantic, Iowa; University of Nebraska College of Medicine, 1904; formerly city health officer; affiliated with Atlantic Memorial Hospital, where he died July 18, aged 74, of heart disease.

Clement Harrisse Arnold, Palo Alto, Calif.; Johns Hopkins University School of Medicine, Baltimore, 1918; on the staff of Palo Alto Hospital; died July 9, aged 64, of heart disease.

Maurice Asher, Maplewood, N. J.; University of the City of New York Medical Department, New York, 1893; also a graduate in pharmacy; served during World War I; died July 9, aged 84.

Harry Abraham David Baer ⊕ Allentown, Pa.; Jefferson Medical College of Philadelphia, 1917; served during World War I; formerly owner of a hospital bearing his name; died in Allentown Hospital July 15, aged 61, of cerebral hemorrhage.

LeRoy Harrison Bailey, Los Angeles; New York Homeopathic Medical College and Flower Hospital, New York, 1913; served during World War I; staff physician in the city schools; died in the Hospital of the Good Samaritan July 5, aged 59, of hypertension and dissecting aortic aneurysm.

Joseph John Bailo, Windsor Locks, Conn.; Marquette University School of Medicine, Milwaukee, 1946; served during World War II; interned at St. Francis Hospital in Hartford, where he died June 26, aged 27.

Campbell Atkinson Baird, Mount Airy, N. C.; North Carolina Medical College, Davidson, 1904; died in the Williamsport (Pa.) Hospital July 23, aged 78, of acute coronary thrombosis.

James Henry Morgan Barber, Washington, D. C.; Georgetown University School of Medicine, Washington, 1888; member of the American Medical Association; died July 11, aged 83.

George Harbert Bartholomew, Los Angeles (licensed in California in 1918); died in California Lutheran Hospital July 11, aged 57, of pulmonary embolus.

Joseph John Bateman ⊕ Washington, D. C.; Loyola University School of Medicine, Chicago, 1919; died in the Georgetown University Hospital July 18, aged 64, of coronary thrombosis.

Marshall Rowles Beard, San Fernando, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1938; member of the American Medical Association and of the American Trudeau Society; served a residency at the Olive View (Calif.) Sanatorium; died July 25, aged 37.

Joseph Fortunat Belanger, Providence, R. I.; Laval University Faculty of Medicine, Quebec, Canada, 1913; died July 12, aged 64.

William Alexander Bevard, Washington, D. C.; National University Medical Department, Washington, 1894; for many years assistant medical officer in the Labor Department; died July 14, aged 90, of cerebral hemorrhage.

Frederick Egbert Bigelow, Chicago; Rush Medical College, Chicago, 1897; died in the Illinois Central Hospital July 5, aged 79, of cerebral hemorrhage, pneumonia and hypertension.

Robert Knox Bingham, Boone, N. C.; University of Tennessee Medical Department, Nashville, 1905; attending physician, Watauga Hospital; died in Davis Hospital, Statesville, July 30, aged 71, of sarcoma of the head of the pancreas.

Charles Alva Blayney, Penfield, Pa.; Jefferson Medical College of Philadelphia, 1900; member of the American Medical Association; for many years store physician at Gimbel Brothers; received an honorary degree of doctor of science from Waynesburg (Pa.) College in 1943; died in the Philadelphia General Hospital July 11, aged 80, of carcinoma of the pancreas with metastases.

Winfred Reynolds Blume ⊕ Sioux City, Iowa; University of Nebraska College of Medicine, Omaha, 1930; affiliated with Lutheran, St. Joseph, Mercy and St. Vincent's hospitals; died July 21, aged 47, of acute coronary occlusion.

Arthur Francis Boell, Detroit; University of Michigan Medical School, Ann Arbor, 1921; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Mount Carmel Mercy and St. Joseph's Mercy hospitals; died July 21, aged 53, of heart disease.

Siegfried Boxer, New York; Medizinische Fakultät der Universität, Wien, Austria, 1902; died in Mount Sinai Hospital July 7, aged 71, of myocardial infarction and anemia due to gastrointestinal hemorrhage.

William Frederick Bruns, Ceredo, W. Va.; Eclectic Medical Institute, Cincinnati, 1888; member of the American Medical Association; formerly a member of the board of education for the Ceredo-Kenova Independent School District, serving as its president; died July 6, aged 83, of myocarditis.

Thomas Ambrose Buchanan, Oklahoma City; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; for many years surgeon for the Santa Fe Railroad; died in Manitou Springs, Colo., July 31, aged 72, of coronary thrombosis.

John William Buehler, Aromas, Calif.; Chicago Homeopathic Medical College, 1895; affiliated with the Watsonville (Calif.) Hospital, where he died July 3, aged 80, of cerebral thrombosis.

Edward Kimball Burbeck ⊕ Marblehead, Mass.; Johns Hopkins University School of Medicine, Baltimore, 1907; affiliated with Mary Alley Emergency Hospital; died July 1, aged 69, of coronary thrombosis.

Thomas Aloysius Burke ⊕ Cleveland; Western Reserve University Medical Department, Cleveland, 1888; member of the American Academy of Ophthalmology and Otolaryngology; died in St. Mary's Hospital, Duluth, Minn., July 18, aged 85, following an appendectomy.

Norman Leonard Burnham ⊕ Buffalo; University of Buffalo School of Medicine, 1896; formerly assistant professor of medicine at his alma mater; served as examiner on draft boards during World Wars I and II, for which he was awarded the service citation; for many years associated with Buffalo General Hospital, where he died July 21, aged 81, of carcinoma of the bladder and adenoma of the prostate.

Herbert Arthur Burns ⊕ Anoka, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; member of the American College of Chest Physicians; served during World Wars I and II; formerly medical superintendent of the Minnesota State Sanatorium at Ah-gwah-ching; chief of tuberculosis control unit, division of institutions for the state of Minnesota; died in the Veterans Administration Hospital, Minneapolis, July 8, aged 66.

Edmund Bradford Burwell, Tacoma, Wash.; University of Virginia Department of Medicine, Charlottesville, 1900; died in St. Joseph's Hospital July 17, aged 72, of auricular fibrillation and arteriosclerosis.

Frederick Leonard Case, Columbus, Ohio; Ohio Medical University, Columbus, 1900; served on the staff of the Mount Carmel Hosital; died July 7, aged 87.

Samuel C. Cawthorn, West Ridge, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; died July 21, aged 90.

Walter B. Christophel, Mishawaka, Ind.; Northwestern University Medical School, Chicago, 1909; served as president of the Mishawaka Chamber of Commerce; died July 21, aged 69, of cerebral hemorrhage.

Reamer Lorenza Cockfield, Lake City, S. C.; University of the South Medical Department, Sewanee, Tenn., 1908; Medical College of the State of South Carolina, Charleston, 1909; member of the American Medical Association; formerly city councilman and chairman of the city board of health; died in McLeod Infirmary, Florence, July 7, aged 65, of coronary thrombosis.

Lazarus N. Cohler, Chicago; University of Illinois College of Medicine, Chicago, 1915; member of the American Medical Association; died in the American Hospital July 27, aged 56, of chronic cholecystitis and cholelithiasis.

Carroll Dunham Conard, Mount Vernon, Ohio; Cleveland-Pulte Medical College, 1914; member of the American Medical Association; served during World War I; died July 26, aged 57.

Ernest Cooper, Miami, Fla.; Medical College of Indiana, Indianapolis, 1898; at one time practiced at Plainfield, Ind., at which time he was president of the Hendricks County Medical Society; died July 23, aged 79, of coronary thrombosis.

Marion Franklin Cruze, Powell Station, Tenn.; Tennessee Medical College, Knoxville, 1909; for many years justice of the peace; died in St. Mary's Memorial Hospital, Knoxville, July 27, aged 65, of uremia.

Lloyd Glenn Dack, St. Paul; University of Minnesota Medical School, Minneapolis, 1916; member of the American Medical Association; specialist certified by the American Board of Ophthalmology; affiliated with the Children's Hospital, Gillette State Hospital for Crippled Children and Mounds Park Hospital; died July 9, aged 59, of coronary thrombosis.

Andrew V. Dahlberg ⊕ Chicago; Bennett Medical College, Chicago, 1906; founder and chairman of the board of directors of the South Shore Hospital, where he died July 22, aged 74, of carcinoma of the pancreas.

Richard E. Davies ⊕ Waukesha, Wis.; Rush Medical College, Chicago, 1896; an Associate Fellow of the American Medical Association; served overseas during World War I; affiliated with Waukesha Memorial Hospital, where he died July 26, aged 78, of cardiovascular renal disease.

George Carlon Davis, Gillett, Ark. (licensed in Arkansas in 1909); member of the American Medical Association; died July 1, aged 65.

Edward Owens Day, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; member of the American Medical Association; served during World War I; affiliated with St. Vincent's, Baptist and University hospitals; died in the Army and Navy Hospital in Hot Springs July 18, aged 66, of congestive heart failure.

Albert D. De Haven, Xenia, Ohio; Bennett College of Eclectic Medicine and Surgery, Chicago, 1888; member of the American Medical Association; formerly city commissioner, city health commissioner; member of the city council and mayor; for many years examiner for the Metropolitan Life Insurance Company; died July 23, aged 83; of uremia and arteriosclerosis.

Arlendo Irvin Dennison, McKenzie, Tenn.; University of Tennessee Medical Department, Nashville, 1904; died July 20, aged 75, of cerebral hemorrhage.

Johnson Frank Ditto, Portland, Ore.; St. Louis College of Physicians and Surgeons, 1915; member of the American Medical Association; affiliated with Portland Sanitarium and Hospital; died July 12, aged 67, of coronary thrombosis.

Dan Caldwell Donald Jr., Philadelphia; Harvard Medical School, Boston, 1947; resident in neurology at Jefferson Medical College Hospital; killed near Whitehall, N. Y., July 25, aged 25, when an airplane crashed.

Rex Dowler Duncan ⊕ Los Angeles; University of Southern California College of Medicine, Los Angeles, 1909; affiliated with the Los Angeles General Hospital; died in July, aged 63.

William Ambrose Dunn, Boston; University of the City of New York Medical Department, 1893; member of the American Medical Association; served as police surgeon and as physician to the city prison; died in City Hospital July 14, aged 90, of arteriosclerosis and a fractured femur received in a fall at home.

Elsworth De Marr Erskine, Steubenville, Ohio; Baltimore Medical College, 1893; served during World War I; died in the Veterans Administration Hospital, Aspinwall, Pa., July 8, aged 79, of an infected cyst of the lung.

Robert Howard Eveleth, Roseville, Calif.; Hahnemann Medical College of the Pacific, San Francisco, 1906; city health officer; on the senior staff of Sutter Hospital, Sacramento; died July 15, aged 69, of cardiac failure and nephrosis.

Abraham R. Fellman, Beverly Hills, Calif.; Detroit College of Medicine, 1913; at one time on the staff of Grace Hospital in Detroit; died July 21, aged 59, of heart disease.

Frederick Laurence Flynn, St. Petersburg, Fla.; Georgetown University School of Medicine, Washington, D. C., 1943; member of the American Medical Association; certified by the National Board of Medical Examiners; on the staffs of Mound Park Hospital and St. Anthony's Hospital, where he died July 12, aged 40, of coronary occlusion.

David Ingham Frey ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1904; served during World War I; consultant in pediatrics at Bronx Hospital, where he died July 25, aged 67, of cerebral hemorrhage.

Fred Maxwell Galloway, Lynbrook, N. Y.; Long Island College Hospital, Brooklyn, 1906; served as police surgeon and health officer; formerly practiced in Brooklyn, where he was on the staffs of the Bushwick, Samaritan and Kings County hospitals; past president of the medical board of Mercy Hospital; on the staff of the South Nassau Communities Hospital in Rockville Centre; died July 19, aged 65, of coronary thrombosis.

Daniel J. Gilbert, Port Byron, N. Y.; University of the City of New York Medical Department, 1890; health officer of the towns of Montezuma, Throop and Conquest; died in the Auburn City (N. Y.) Hospital July 29, aged 83, of bronchopneumonitis and myocardial degeneration.

Edward John Godfrey ⊕ Waterbury, Conn.; Georgetown University School of Medicine, Washington, D. C., 1915; member of the New England Dermatological Society and the American Public Health Association; health officer; affiliated with St. Mary's Hospital; died July 2, aged 62, of coronary occlusion.

John James Wilson Grimes, Chicago; Loyola University School of Medicine, Chicago, 1922; member of the American Medical Association; for many years affiliated with the Municipal Tuberculosis Sanitarium; died in Sacred Heart Sanitarium, Milwaukee, July 7, aged 67.

Govan B. Harley, Dorchester, S. C.; Chattanooga (Tenn.) Medical College, 1898; died July 28, aged, 86, of coronary thrombosis.

Eugene Hemmeger, Adelphi, Ohio; Starling Medical College, Columbus, 1895; member of the American Medical Association; president and director of the Adelphi Banking Company; died July 22, aged 75, of coronary thrombosis.

Rayburn Nelson Joyner, Marianna, Fla.; Duke University School of Medicine, Durham, N. C., 1933; member of the American Medical Association; served as director of the Jackson County health department; died July 9, aged 37, of heart disease.

Herman Roscoe Kauffman ⊕ Toledo, Ore.; Ohio Medical University, Columbus, 1904; served during World War I; at various times state senator, mayor and health officer; affiliated with Lincoln Hospital; died July 7, aged 70, of coronary thrombosis.

Richard Kehrmann, Oteen, N. C.; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1914; affiliated with the Veterans Administration Hospital; died at Soco Gap, Waynesville, July 4, aged 61, in an automobile accident.

Rube Crow Kennerly, Camden, Ark.; College of Physicians and Surgeons, Little Rock, 1909; member of the American Medical Association; county health officer and director of district number 7; died in Camden Hospital July 28, aged 66, of heart disease and uremia.

David Terry Kimbrough, Nashville, Tenn.; University of Nashville Medical Department, 1897; for many years associated with Veterans Administration hospitals at various places; died July 29, aged 76, of carcinoma of a bronchus.

Ernest Thomas Kinsey, Madison, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914; member of the American Medical Association; died in Miami July 25, aged 57, of cerebral hemorrhage.

Milton Klein ⊕ Dover, N. J.; Creighton University School of Medicine, Omaha, 1934; died July 12, aged 37, following an operation for removal of a pituitary adenoma.

Howard Andrew Knox ⊕ New Hampton, N. J.; Dartmouth Medical School, Hanover, N. H., 1908; former officer in the U. S. Army reserve; served in the Mexican campaign; at one time an assistant surgeon in the U. S. Public Health Service attached to the immigration service; died in the Jersey City Medical Center, Jersey City, July 27, aged 64, of arteriosclerosis.

Thaddeus Marion Koppa, Dallas, Texas; University of Illinois College of Medicine, Chicago, 1933; member of the American Trudeau Society; formerly director of the bureau of epidemiology and the tuberculosis division of the bureau, state department of public health of Michigan; at one time director of the bureau of communicable diseases of the Wyoming State Department of Health; affiliated with the Veterans Administration; died in Kerrville July 22, aged 40, of coronary thrombosis.

Frank John LaRue, Elberta, Mich.; Grand Rapids Medical College, 1906; died in the University Hospital, Ann Arbor, June 9, aged 77, of coronary occlusion and hepatocellular carcinoma with metastases to both lungs.

Joseph F. Lauvetz, Wahoo, Neb.; John A. Creighton Medical College, Omaha, 1905; member of the American Medical Association; served as county and city physician; a director of the Wahoo State Bank; affiliated with St. Catherine's Hospital and Creighton Memorial St. Joseph's Hospital in Omaha; died in Omaha July 27, aged 64, of coronary disease.

Harold Theron Lehmann, Socorro, N. Mex.; University of Oklahoma School of Medicine, Oklahoma City, 1940; died July 21, aged 45, of coronary thrombosis.

Joseph Leland, Birmingham, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1904; member of the American Medical Association; on the staff of Jefferson-Hillman Hospital; died July 23, aged 67.

Harry Leshin ⊕ Hightstown, N. J.; Long Island College Hospital, Brooklyn, 1920; on the staffs of the William McKinley Memorial and St. Francis hospitals and the Mercer Hospital in Trenton; died in the New York Post Graduate Medical School and Hospital, New York, July 26, aged 52.

John Sidney McCafferty ⊕ Freeport, Pa.; University of Pittsburgh School of Medicine, 1933; served during World War II; affiliated with the Allegheny Valley Hospital in Tarentum; died in Montreal, Canada, July 3, aged 40, of heart disease.

Greene Day McCall, Fulton, Mo.; Barnes Medical College, St. Louis, 1895; member of the American Medical Association; fellow of the American College of Surgeons; served during the Spanish American War and World War I; for many years physician for the Missouri School for the Deaf and Dumb; died July 22, aged 75, of heart disease.

Samuel Lloyd McCarthy, Altoona, Pa.; Jefferson Medical College of Philadelphia, 1905; died in the Altoona Hospital July 19, aged 69, of cardiac decompensation.

Guy Leroy Millington, Girard, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1900; member of the American Medical Association; served as health officer of Sumner and Crawford counties; at one time a member of the state board of medical registration and examination; died in Girard General Hospital, recently, aged 70.

Sidney Mitchell, Plattsburg, N. Y.; University of Vermont College of Medicine, Burlington, 1906; past president of the Clinton County Medical Society; member of the American Medical Association; served during World War I; affiliated with Champlain Valley Hospital and Physicians Hospital, where he died July 26, aged 68, of cerebral thrombosis.

Gregory Leo Robillard ⊕ Brooklyn; Fordham University School of Medicine, New York, 1918; fellow of the American College of Surgeons; member of the American Association of Industrial Physicians and Surgeons; for many years assistant medical examiner of Richmond County; served during World War I; affiliated with Norwegian Lutheran Deaconesses' Home and Hospital, Victory Memorial Hospital and Brooklyn Cancer Institute; died July 2, aged 54, of coronary disease.

John C. Russell, Saranac Lake, N. Y.; University of the City of New York Medical Department, New York, 1886; served as president of the village; past president and for many years member of the school board; in January 1948 resigned as president of the Saranac Lake Federal Savings and Loan Association, which he continued to serve as director until the time of his death; affiliated with Saranac Lake General Hospital; died July 10, aged 87, of arteriosclerosis.

William Warren Spiro, Long Island City, N. Y.; University and Bellevue Hospital Medical College, New York, 1904; member of the American Medical Association; affiliated with the Doctors Hospital, where he died July 13, aged 67, of cerebral hemorrhage.

George Albert Spray ⊕ Wichita, Kan.; University Medical College of Kansas City, Mo., 1911; affiliated with Wesley, St. Joseph and St. Francis hospitals; died July 21, aged 68, of coronary occlusion.

Charles W. Thierry, Jr., St. Louis; Washington University School of Medicine, St. Louis, 1898; member of the American Psychiatric Association; formerly affiliated with St. Vincent's Sanitarium and the City Sanitarium; died in the Malcolm A. Bliss Psychopathic Institute July 23, aged 74.

Charles R. Treat, Sharon, Wis.; Chicago Homeopathic Medical College, 1888; member of the American Medical Association; died July 4, aged 83, of heart disease.

Leonidas C. Walker, Jamestown, Ohio; the Hahnemann Medical College and Hospital, Chicago, 1882; served on the school board and city council; died in Xenia, July 1, aged 94, following fracture of his hip in a fall.

Harry Claud Warren ⊕ San Francisco; University of California Medical School, San Francisco, 1904; first vice president of the American College of Chest Physicians; member of the American Trudeau Society; died in St. Luke's Hospital July 29, aged 67.

George Waters ⊕ Port Huron, Mich.; Detroit College of Medicine, 1903; member of the American Trudeau Society; served as acting assistant surgeon in the U. S. Public Health Service; affiliated with Port Huron Hospital, where he died July 4, aged 75, of myocarditis.

Emmett Burns Whigam, Akron, Ohio; Cleveland Medical College, 1895; police and fire physician for many years; died July 6, aged 76, of coronary sclerosis.

James P. Will, Jackson, Mich.; Michigan College of Medicine and Surgery, Detroit, 1897; died July 1, aged 83, of diabetes mellitus and arteriosclerosis.

Foreign Letters

ITALY

(From Our Regular Correspondent)

FLORENCE, Aug. 15, 1949.

Action of Anesthetics Augmented by Vitamin B_1

At the Medicosurgical Society of the Romagna, Dr. Neri and Dr. Bazzocchi discussed the augmented action of anesthetics by vitamin B_1. In his experimental and clinical research Dr. Neri used anesthetics either by local infiltration or by spinal anesthesia after an adequate amount of vitamin B_1 had been added to the anesthetic solution. He observed that the concentration of the anesthetic drug could be decreased to about one-third or one-half while the anesthetic effect remained the same.

Dr. Bazzocchi carried out experiments on the sciatic nerve of rabbits, based on the concept demonstrated experimentally by him and by Professor Donaggio that the anesthesia represents a reversible change; he observed that the vitamin B_1, which by itself does not exert any analgesic effect when brought in contact with the isolated sciatic nerve, speeds up and prolongs the action of an anesthetic. These experimental findings were confirmed by the clinical application of anesthetics by local infiltration or by spinal anesthesia. Vitamin B_1 alone, when used intravenously, does not exert any anesthetic effect but, according to the speaker, renders the subject more excitable.

The results of this research were published in Italian medical periodicals, and some hospitals have since employed this method, the results of which will be followed up by Professor Paolucci, director of the surgical clinic of the university in Rome.

In 1948 work was done at the University of Padua, by application of the solution to the cornea, but according to the speaker this was not done with the proper technic and the results did not accord with those previously reported. Further results obtained by the speaker were published in the *Journal of the International College of Surgeons*. There are also favorable French reports, and the results have received confirmation by Leger and Lange.

Under the supervision of Professor Paolucci, studies are now in progress on the employment of vitamin B_1 in peridural anesthesia, in which a reduction of the amount of the highly concentrated anesthetic solution which has been in use and accelerated action would be advantageous.

The mechanism through which vitamin B_1 exerts its action on the anesthetic still is not fully understood. Dr. Bazzocchi and Dr. Bocchetti believe that interference with tissue respiration is involved. One may, for instance, consider an action of the mordant type by which the vitamin B_1 may render the nerve more sensitive or by which the nerve bundles may make better use of the anesthetic substance.

Conference Held by Dr. Leonard A. Scheele

Dr. Leonard Scheele, Surgeon General, United States Public Health Service, and head of the United States delegation to the World Health Congress, held a conference in Rome, discussing the organization of the Public Health Service. He described the Public Health Service of the United States as the most important American state organization which is devoted to the health standards of the people. Its functions are similar to those exercised in Italy by the Office of the High Commissioner for Hygiene and Public Health, but, although it represents an autonomous entity, it forms a part of the Federal Security Agency, which is in charge of effectuating the programs of the government concerning social assistance, instructions, welfare and public health.

Deaths

The sudden death of Prof. Giulio Andrea Pari, director of the Institute of Medical Pathology of Padua University, has been announced. Professor Pari was born in Udine in 1880. As a student he became interested in the study of physiology, and, after receiving a doctor's degree, he continued to study at the physiologic institute of Padua under the directorship of Professor Stefani until he was given the right to hold university courses. He then became assistant and associate professor of pathology at the same university, having as his chief Prof. Luigi Lucatello.

He went to Vienna and became a pupil of Von Noorden, Falta and Siegmund, and in Bonn he studied with Ribbert and Flügge; returning to his homeland after this apprenticeship, he proved to be a brilliant investigator in both clinical and pathologic work. From 1925 until his death he had the chair of medical pathology in Padua. He published about one hundred and thirty scientific papers. Among his most important contributions are those concerning the physiology of the nerve centers; phenomena of excitability, of response to stimuli, of fatigue and of restoration of the centers of reflex, and the pathogenesis of Cheyne-Stokes phenomenon.

SWITZERLAND

(From a Special Correspondent)

July 19, 1949.

Medicine in War

The sessions at the Diplomatic Conference of Geneva are interesting to the medical profession because of the discussions on medical problems which arise especially during war. The majority of the points studied have been under consideration by the Medico-Juridical Commission, which met almost fifteen years ago in Monaco. Approved were proposals for improvement in the treatment of prisoners of war so that they will be assured care by physicians of their own nationality and effective protection of the civil population, women, old persons and children, from war operations and bombardments. Originality lies in the creation of "immune" medical localities for injured military personnel and of places and zones for the safety of civilians who do not participate in any way in the war effort of the belligerents.

Several interesting problems remain for solution. One is concerned with the freedom of medical personnel. To improve the treatment of injured military personnel, it will be necessary to provide immunity (neutrality) to nurses, to hospital personnel and particularly to physicians who take care of the wounded. Dunant, the Genevan founder of the Red Cross, spoke of "neutralization" to describe this immunity. He applied to human beings an expression which jurists of international law have reserved for territories.

In this manner the principle of noncaptivity of medical personnel was established. This idea has been followed as a sacred principle of the conferences of Geneva, during conventions held from 1864 to 1929, the date of the convention the principles of which are still in force.

In 1947, during a conference of government representatives who met in the offices of the International Committee of the Red Cross, this principle was contradicted for the first time. On the initiative of the delegates of the United Kingdom, Canada and the United States, who recalled the experience of the first world war and the inadequacy of the medical care in the prisoner of war camps, it was accepted that the medical personnel of the fighting armies should be retained by the detaining powers, as needed for the prisoners. Such personnel would be given any benefits due prisoners of war. The principle of captivity of medical personnel was then voted for. Several delegations, however, while recognizing the humanitarian thoughts behind the Anglo-Saxon request, became alarmed at the possible consequences of this new principle and decided to attempt to restore the original principle of noncaptivity. Since then there have been these two contradictory principles, and their supporters have not ceased their opposition.

In Stockholm in 1948, at the preliminary Conference of the Red Cross, which established the basis of the discussions of the Diplomatic Conference of Geneva, the principle of noncaptivity of medical and religious personnel was voted for by an imposing majority.

At Geneva in 1949, to avoid reopening the debate, the majority of the delegates were ready to maintain the text of Stockholm. However, the delegation of the United Kingdom presented an amendment which called for separation of captured medical personnel from the convention concerning the injured and sick and insertion in the convention on the treatment of prisoners. A formula of agreement finally was worked out and adopted.

Insignia of the Red Cross

With respect to the insignia of protection, there is now a tendency to abandon the use of the Red Cross and to adopt a universal sign, a simple geometric figure which has no political or religious significance in any part of the world. This is, however, still controversial. The diversity of signs employed at present can only be a weakening element. In addition to the sign of the Red Cross, there exists the crescent, the sun and the red lion, and recently Israel has asked recognition for the red shield of David.

International Medical Code

The idea that medicine of the entire world should be regulated by an international medical code, like that which has been proposed by the Medico-Juridical Commission of Monaco, is becoming better crystallized. Under the auspices of the Sovereign Prince of Monaco a collective work is being published, which is the first attempt at codification of international medical law, as has already been advocated by the World Medical Association.

TURKEY

(From Our Regular Correspondent)

ANKARA, Aug. 22, 1949.

Streptomycin Therapy in Tuberculosis

Twenty-three years ago the Ministry of Public Instructions established in Istanbul a 300 bed preventorium and a 200 bed sanatorium for the free treatment of pretuberculous students and tuberculous teachers and students. The ministry appoints the physicians and other employees. Dr. Zeki Köseoglu, chief physician, and Dr. N. Pinar reported on the use of streptomycin in 88 of these patients, of whom 74 had pulmonary tuberculosis and 14 tuberculosis of other organs. Forty-six patients were at first given a daily dose of 2 Gm. of streptomycin, which was later reduced to 1.5 Gm. (one injection every six hours). Four patients received a daily dose of 1 Gm. (one injection every twelve hours). The average total amount given was 119 Gm.; the average time of treatment was sixty-four days. Excellent results were obtained in 7 patients with acute and subacute pulmonary and miliary tuberculosis. Five of these patients recovered completely; all clinical symptoms disappeared, and results of radiographic examinations were negative. At the end of the treatment the sputum of all patients was negative on concentration and culture. Of 27 patients with exudative and exudative-productive tuberculous infiltration, 4 recovered completely, 15 showed decided improvement and 8 only slight improvement. The sputum was normal in 84 per cent of these patients.

Of 40 patients with chronic fibroid and fibroid-caseous tuberculosis, amelioration was moderate in 12 and only slight in a few. Four patients died while receiving treatment. In 5 of 7 patients with simple thin-walled cavities, the cavities closed and decreased in size, and in 1 patient the cavity remained unchanged. In 3 patients with ascitic tuberculous peritonitis, excellent results were obtained, absorption of exudate occurred within a few weeks. Streptomycin therapy was satisfactory in 5 patients with tuberculous laryngitis associated with moderate or far advanced pulmonary tuberculosis. Of 3 patients with tuberculous meningitis, streptomycin therapy failed in 2 patients, and 1 patient recovered. Streptomycin did not have any beneficial effect on 3 patients with tuberculous empyema.

These results indicate that streptomycin promises to be a powerful chemotherapeutic agent for pulmonary tuberculosis but that at present streptomycin therapy should not be regarded as a substitute for other methods but as complementary to them. Streptomycin is indicated for the treatment of miliary and hematogenous disseminated nodular tuberculosis, especially exudative infiltration, acute bronchopneumonic tuberculosis and other bronchogenic diffusions. Streptomycin is also effective in the treatment of tuberculous lesions of mucous membranes and tuberculous meningitis. It can be used intermittently in small doses for symptomatic relief in chronic types of tuberculosis.

New Maternity Hospital

The first maternity hospital in Ankara was established by the Ministry of Health and Social Assistance in 1924. Ankara then had a population of 71,425. The maternity had 10 beds and was housed in an old two story frame building. Applications for admission chiefly came from wives of civil servants and school teachers; the natives almost never sought admission. As a means of filling the often vacant beds, the obstetricians and midwives in charge resorted to personally conducted propaganda, drawing the attention of pregnant native women to the maternity hospital, by showing them round the hospital and by explaining that all care and attendance was free of charge. As time went on more and more native women came to the hospital, so that 15 more beds were soon added and there was still a waiting list. Then the maternity hospital was moved to a three story concrete building. During the last ten years it often happened that in a single day there were as many as twenty deliveries, including cases of abnormal conditions and ectopic pregnancies.

Though the foundation stone of the new 200 bed Ankara Maternity Hospital was laid in 1937, the lack of building material and equipment and the inflation during the second World War prevented the hospital's being ready to receive patients until the beginning of 1949. The more than 135 free beds were soon occupied. The five story building in the center of the city has all modern conveniences, private rooms and nurseries.

The Ankara Maternity Hospital has from its inception in 1924 been under the direction of chief obstetrician and gynecologist Dr. Zekai Tahir Burak.

There are at present twenty-four obstetricians and interns and twenty midwives, and plans for a school for midwives and nurses to be trained at the maternity hospital are under way. The maternity is attached to the Ministry of Health and Social Assistance and is entirely supported from its funds.

According to the 1945 census the 26 year old capital of the Turkish Republic had a population of 227,506, which is continually increasing. Other institutions with obstetric departments are the University Gülhane Hospital, the government railway hospital, the municipal hospital and the military hospital, with a total of nearly 300 beds. There are two busy private maternity hospitals in Ankara.

There are at present forty-one obstetricians, including interns, in Ankara; of these, six are women. Seventy per cent of all deliveries are still attended by midwives in the homes. The maternal mortality rate at the maternity hospital is 2.6 per thousand as against 5.3 formerly, when patients from outlying rural communities arrived in an advanced critical stage. There are no quintuplets or quadruplets in the twenty-four year record of the maternity hospital, but 4 per cent were twins; triplets were rare.

The birth rate of Ankara is 20 to 25 per thousand. Two-thirds of the population consists of civil servants, teachers, school children and university students. The birth rate in rural communities is 35 to 40 per thousand. The 1929 Public Health Law prohibits birth control in Turkey.

Correspondence

MORE BEDS FOR THE TUBERCULOUS

To the Editor:—It seems to me there is one important point overlooked in the editorial in THE JOURNAL, August 20, on "The Demand for More Beds for the Tuberculous." The cost of the additional beds needed now for tuberculous patients can be justified when they are added to regional general hospitals. Tuberculosis in many sections of the country is disappearing rather rapidly. The national decline in the death rate of 11 per cent last year was an acceleration of the decline that has been going on for the past forty years. As the disease is discovered in its earlier stages, it is becoming more and more a general hospital problem like any other acute illness. The beds, when they are constructed in general hospitals, can be used for other types of patients when tuberculosis disappears. There is a possibility, perhaps even a probability, that medical science will find a specific cure for tuberculosis that will make it as rare as typhoid within a short time.

GRAHAM L. DAVIS, Battle Creek, Mich.

INDUSTRIAL POLLUTION OF ENVIRONMENT

To the Editor:—The editorial "Industrial Pollution of Human Environment," in THE JOURNAL, Aug. 27, 1949, is of vital interest to me and should be to every person concerned in national health. From 1903 to 1913 I was engaged in the practice of industrial medicine and surgery in the Pittsburgh area. As chief surgeon to several large industrial concerns it was my duty to conserve as many working days as possible for employees. In the years 1903 to 1908 the mortality rate from typhoid ranged from 150 to 180 per 100,000; the morbidity rate was alarming. Investigation of the source of infection revealed pollution of all water supplies. Where political bosses' contractors were supposed to be supplying the city with water from the Aspinwall filtration plant, the city was getting only 50 per cent potable water. To obviate this, the Brilliant pumping station source of supply was pumping sewage water into the Highland Park reservoir. The result of this investigation was given to the Pittsburgh papers. I then wrote an article, "The Responsibilities of Municipalities in the Ohio Valley for Epidemics of Typhoid" (J. A. M. A. **51**: 1496 [Oct. 31] 1908) which was followed by action of the municipalities and eventually resulted in a pure water supply for Pittsburgh and other cities. This, however, did not solve the sanitary problem.

After this, I called attention to insect carriers of disease (Blue-Bottle Flies as Carriers of Infection, J. A. M. A. **53**: 1561 [Nov. 6] 1909; Insect Carriers of Typhoid, J. A. M. A. **57**: 1432 [Sept. 3] 1912), and then the industrial hazard (Vanadiumism, J. A. M. A. **56**: 1648 [June 3] 1911). After my article "Laws Relative to the Sanitary Control of Public Eating and Drinking Places" (J. A. M. A. **59**: 2020 [Dec. 7] 1912) the commissioner of health of the Commonwealth of Pennsylvania, Dr. Dixon, initiated the enactment of laws which went far to correct this sanitary problem and was followed by similar legislation in other states. At this time, some forty years later, these attempts to set forth the type and degree of health hazards may appear feeble, but at least it was a beginning of a more healthful era.

The editorial is a succinct statement of facts. What are state and federal governments doing to remedy conditions hazardous to human life? If they now disregard the lives of the American people, what are they going to do under socialized medicine? Socialized medicine, as observed at work in Europe, has made sick beggars of its people. If Americans want to be treated like the *verdammte schweinhund,* they should support the proposed laws of the welfare state.

The administration can contribute billions for the preservation of political security but only scant millions for the health of the American people. If it were not for the unselfish work of physicians and lay foundations for the investigation of health problems, the health of our people would be at an all-time low. As matters stand today, the United States is the healthiest nation on earth. When the mortality and morbidity from cardiovascular diseases, cancer, poliomyelitis and industrial diseases are increasing at an alarming rate, such a condition should stimulate thinking physicians and laymen to action on the subject of industrial pollution of human environment.

W. FOREST DUTTON, M.D., Noel, Mo.

REFRIGERATION ANESTHESIA

To the Editor:—In further reply to Dr. de Takat's letter on this subject (THE JOURNAL, July 16, 1949, page 974):

1. His original statement which prompted my criticism, namely, that all refrigerated tissues must be amputated, is obviously untrue, as proved by hundreds of successfully healed amputations after refrigeration anesthesia.

2. Tourniquet paralysis has nothing to do with this statement. It is not a problem in the amputations for which refrigeration has been chiefly used. There are ways of avoiding it for orthopedic or other operations.

3. Large and Heinbecker's repetition of the long familiar production of "immersion foot" damage by ninety-six hours of continuous soaking in ice water has already been fully answered (*Arch. Phys. Med.* **26**:92-98, 1945). This being their argument against brief refrigeration anesthesia, I invited them to keep up any of their preferred forms of anesthesia for ninety-six hours continuously and compare results. Furthermore, Dr. de Takats should notice that even after this ninety-six hour mistreatment the legs did not require amputation.

4. It is surgically false that wrapping limbs in cotton and maintaining normal body temperature will prevent gangrene after iliac or femoral artery occlusion. Refrigeration was the essential factor in preservation by Mock and others whom I cited.

5. Evidently there is still a lack of comprehension of the distinction between effects of temperature and effects of defense reactions (*Canad. M. A. J.* **51**:220-226, 1944; *Anesth. & Analg.* **24**:51-65, 1945; *Clinics* **4**:1642-1674, 1946). The best preservation by cold is illustrated in reactionless isolated tissues (grafts, thrombotic or amputated limbs). Especially the limbs with circulation react with the "immersion foot" changes and require judgment of emergencies which demand radical refrigeration and other occasions for milder cooling, as illustrated in Kross's eleven week treatment of a burned leg (J. A. M. A. **128**:19-20 [May 5] 1945; *S. Clin. North America* **25**:361-370, 1945; *Arch. Surg.* **49**:12-22 [July] 1944). Every form of therapy is supposed to be guided by skill and experience, and disregard of this requirement in the use of hypothermia is responsible for the attacks on it.

FREDERICK M. ALLEN, M.D., New York.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Hospitals: Extent of Tax Exemption.—A number of California hospitals filed separate suits to recover taxes which they contended were wrongfully collected because of their tax-exempt status. All of the suits were consolidated for trial, and, after a hearing in the superior court, the various parties appealed and cross appealed to the district court of appeals, second district, division 1, California.

At the general election held Nov. 7, 1944, an amendment to the California constitution was approved which provided: "In addition to such exemptions as are now provided in this Constitution, the Legislature may exempt from taxation all or any portion of property used exclusively for religious, hospital or charitable purposes and owned by community chests, funds, foundations or corporations organized and operated for religious, hospital or charitable purposes, not conducted for profit and no part of the net earnings of which inures to the benefit of any private shareholder or individual." The following year the legislature, under the permission granted it by the foregoing constitutional amendment, enacted Section 214 of the Revenue and Taxation Code, which exempted "Property used exclusively for religious, hospital, scientific or charitable purposes owned and operated by community chests, funds, foundations or corporations organized and operated for religious, hospital, scientific or charitable purposes . . ." under certain conditions.

A reasonable construction of the "welfare exemption," said the court of appeal, is grounded on sound legal principles. The existence in a community of a hospital which admits, cares for and gives medical aid to the sick and afflicted whether rich or poor, not without compensation in all cases but where in all cases, any fees collected go to pay the expense of operation of the hospital and not to the profit of the founders or shareholders is a public charity in the fullest sense. The policy of tax exemption of hospitals is not founded on maudlin sentiment but on a sound economic principle that the benefits derived by the community at large from the services rendered by such institutions far outweigh the trivial inequality caused by an exemption of their property from taxes. Their ultimate contribution to the public good returns more than a fair equivalent for the exemption afforded them. A "hospital" is primarily a service organization. It furnishes a place where the patient, whether poor or rich, can be treated under ideal conditions. It makes available room, special diet, x-ray, laboratory, surgery and a multitude of other services and equipment now available through the advances of medical science. These facilities also stand ready to serve the community in times of epidemic or disaster. As to what is meant by the phrase "hospital purpose," said the court, we are persuaded that it embraces those facilities or services that must be regarded as reasonable, necessary or appropriate to accomplish the functions of a hospital in furnishing a complete and efficient hospital service to its patients, its doctors and its community.

The first question presented by the appeal, said the court, is whether the use of property by plaintiff hospitals for a nurses' training school and to provide housing for hospital interns, residents, student nurses and other alleged essential employees required to be readily available, constitutes a use exclusively for hospital purposes and therefore renders the property exempt under the welfare exemption. In order to be "used exclusively," as contemplated by the statute, the use must be essential to the operation and conduct of the hospital. If the major hospitals did not operate nursing schools, no student nurses would be available and resort would have to be made to registered nurses at a much greater expense to patients. And obviously, if hospitals did not train nurses, eventually there would be no registered nurses available. It is a matter of common knowledge that in many if not in most hospitals, nurses and student nurses sleep in the hospital building or in a building adjoining the hospital. Manifestly, an emergency condition may arise from time to time during the night requiring immediate attention, which makes it necessary to have more nursing personnel available than is actually on night time duty. This can be accomplished, as alleged by the plaintiffs, only by furnishing housing facilities on the hospital grounds for nurses, student nurses and kindred aids. In so far as the exemption of property used to provide housing for interns, superintendents and other employees is concerned, it will suffice to say that the administration of the affairs of the institution requires that certain personnel and employees be located on the property to the end that the operation may be efficiently conducted and supervised and that emergency cases be cared for as they arise. It is commonly and generally known that admittance may be gained to a hospital at any hour of the day or night. To supply such service, help obviously must be on hand to provide for the handling of such emergencies. We entertain no doubt, the court concluded, that the term "property used exclusively for . . . hospital . . . purposes" means not only the buildings and grounds actually used for housing patients, but adjacent buildings and grounds which are reasonably necessary or appropriate to the purposes and objects of the hospital and which are used directly for the promotion and accomplishment of the same.

The next question was whether buildings under construction, intended to be for use exclusively for hospital purposes and later so used, were within the welfare exemption. The trial court concluded that the welfare tax exemption did not apply to property on which buildings were under construction, even though such buildings were designed and intended exclusively for a hospital or for other hospital purposes. We are persuaded, said the court of appeals, that under a reasonable interpretation the property under consideration should be considered as "used exclusively" for hospital purposes. The rule is epitomized in a Pennsylvania case which said, "Would anyone contend that if a hospital burned to the ground, that the ground on which a new structure was being built and the incompleted building itself, would be subject to taxation? We see no difference in principle between such a case and the one before us. It cannot be said that the ground and the partly erected building thereon is not a part of the hospital merely because the operations of the hospital are excluded from it while the building is in course of erection. . . ."

The next question was whether property used to furnish limited recreational facilities to student nurses, interns and residents was entitled to exemption. The property consists of a tennis court located on the hospital grounds, used as an outdoor recreational facility for the student nurses, interns and residents. The court said that there is no denial of the fact that the nature and type of the recreational facility here under consideration is of a reasonable character both as to the relationship of its cost and size and location of the hospital. It is as important to conserve the health of the nurses, student nurses, interns and residents of the hospital as it is to restore the health of its patients, because on the existence of the former depends to a large extent the accomplishment of the latter.

Finally, the question was raised as to whether hospital property used to house a "thrift shop" in conjunction with the charitable activities of such hospital was entitled to exemption. The "thrift shop" is located in a portion of one of the plaintiff hospital buildings. Donated clothing and furnishings were sold by the Women's Auxiliary of the California Babies' and Children's Hospital, an authorized agency of the Los Angeles Community Chest, and the entire proceeds of the shop were devoted to the maintenance of the free children's clinic maintained jointly by the plaintiff and the agency. We are convinced, said the court of appeals, that the property on which the thrift shop was conducted was exclusively used for hospital and purely charitable purposes. This is not a commercial enterprise and does not compete with tax-paying business. The property is used for the purpose of receiving and converting gifts of clothing and furnishings into cash to assist in financing a free clinic for children—strictly a hospital purpose. The thrift shop is not operated for a "profit" as is generally the primary purpose of business. The primary purpose of the thrift shop, on the contrary, is to aid sick and afflicted children by maintaining for their benefit a free clinic. It operates only to convert the gifts of personal property into cash to be used in maintaining a free clinic for children—purely a hospital purpose.

Accordingly it was held that a charitable hospital does not lose its tax exemption when it makes use of its property for the purpose of providing housing for the hospital interns, student nurses and other essential employees, for a training school for its student nurses, for furnishing recreational facilities for its student nurses, interns and residents, or for using its property to house a thrift shop in conjunction with its charitable activities, nor did the hospital property on which buildings were under construction lose its taxation-exempt status.—*Cedars of Lebanon Hospital v. Los Angeles County et al. (5 cases), 206 P. (2d) 915 (Calif., 1949).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners. *Parts I and II,* Feb. 13-15. Centers where there are approved medical schools and five or more candidates. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20 Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II,* New York City, Feb. 9-10. Sec. Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written* Various Centers, October 26 Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

Arkansas: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado: * *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Illinois: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines. Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Kentucky: Louisville, Dec. 12-14. Sec., Dr. Bruce Underwood, 620 South Third Street, Louisville 2.

Louisiana: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Building, New Orleans 12.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Massachusetts: Boston, Nov. 15-18. Sec., Dr. George L. Schadt, 413 East State House, Boston.

Michigan: * *Examination.* Lansing, Oct. 12-14. *Reciprocity.* Oct. 11. Sec., Dr. J. Earl McIntyre, 100 W. Allegan Street, Lansing 8.

Minnesota: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Kansas City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Montana: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N Curry St., Carson City.

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe. Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* New York, Albany, Syracuse and Buffalo. Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

North Dakota: *Examination.* Grand Forks, Jan. 4-6. *Reciprocity.* Jan. 7. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oklahoma: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: * *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

Rhode Island: * *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

West Virginia: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

Wisconsin: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

Wyoming: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arkansas: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Connecticut: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa: *Examination.* Des Moines, Oct. 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Minnesota: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Dec. 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

37:689-848 (April 15) 1949

*Effect of Low Fat Diet on Spontaneously Occurring Arteriosclerosis of Chicken. L. Horlick, L. N. Katz and J. Stamler.—p. 689.

*Anticoagulation Therapy with Heparin/Pitkin Menstruum in Management of Coronary Artery Thrombosis and Its Complications. L. Loewe and H. B. Eiber.—p. 701.

IV. Correlation of Electrocardiographic and Pathologic Findings in Infarction of Interventricular Septum and Right Ventricle. G. B. Myers, H. A. Klein and T. Hiratzka.—p. 720.

Method for Recording Arterial Pressure Pulse and Blood Pressure in Man. L. H. Peterson, R. D. Dripps and G. C. Risman.—p. 771.

New Capacitance-Blood-Pressure-Manometer Amplifier. H. E. Tompkins. —p. 783.

Electrocardiographic Changes Following Electroshock Therapy in Curarized Patients. M. R. Hejtmancik, A. J. Bankhead and G. R. Herrmann.—p. 790.

Measurement of QRS Complex and Interpretation Thereof by Direct and Indirect Deduction. J. B. Kleyn and R. M. F. Houtappel.—p. 806.

Low Fat Diet in Pathogenesis of Arteriosclerosis in Chickens.—Horlick and co-workers fed one group of 16 chickens unlimited quantities of chick starter mash and water. A second group of 14 chickens of the same age received the same chick starter mash from which the fat and cholesterol had been largely removed by alcohol-ether extraction. This diet was made isocaloric by the addition of sucrose, and the vitamins removed in the extraction process were replaced. Feeding was continued for sixty-three weeks. Gross atherosclerosis was observed in 5 chickens (35 per cent) on the low fat diet and in 10 chickens (63 per cent) on the control diet. The lesions appeared earlier and were severer in the control group. The incidence of microscopically visible lesions was equal in both groups. There was no essential difference in the structure of the lesions. The low fat group showed blood cholesterol levels which were consistently higher than those of the control group throughout the course of the experiment. Lipid analysis of the blood at the conclusion of the experiment revealed that all the lipid fractions of the blood were slightly higher in the low fat group than in the control group. It would seem that the evidence does not warrant wholesale restriction of lipids in attempts to prevent the onset of arteriosclerosis. There is suggestive evidence that fat restriction may be a judicious measure in patients with hypercholesteremia even of a moderate degree and possibly in patients with a bad family history of coronary or cerebral arteriosclerosis.

Anticoagulation Therapy with Heparin/Pitkin Menstruum.—Loewe and Eiber treated 20 consecutive, unselected patients, 15 men and 5 women between the ages of 35 and 76, who had acute coronary artery thrombosis and myocardial infarction with heparin in the Pitkin menstruum. The initial dose was 400 mg. administered subcutaneously in the usual manner. Repetitive doses of 400 mg. were generally given every other day during the acute thrombotic phase in order to prevent propagation and to promote resolution of the thrombus. This schedule should be maintained for three to four doses to achieve a continuous and adequate heparin response. Thereafter, if justified by the anticoagulation effects, the individual dose may be given at longer intervals and the amount of the drug per dose reduced to 300 mg. or even 200 mg., as dictated by the specific case. The total dose varied from 1,200 to 3,350 mg. All of the patients in this series were seriously ill, and some were desperately ill. Fourteen of the patients had clinically detectable, complicating thromboembolic episodes. One of these complicated cases was fatal and represented the only treatment failure in the entire series. In none of the 19 patients who recovered was there evidence of thrombus propagation, once anticoagulation therapy was instituted. All complicating thromboembolic processes were promptly terminated. In the optimally treated patients the span of bed rest was conspicuously reduced. Convalescence was accelerated, and the patients were restored more rapidly to their accustomed activity. The gratifying response of this small though representative series of gravely ill patients seems to indicate that heparin in a Pitkin menstruum, because of the simplicity of administration, prompt effectiveness and absence of toxicity, is well suited for the treatment of acute coronary artery thrombosis and its complications.

American Journal of Diseases of Children, Chicago

76:365-484 (Oct.) 1948

Humanizing Hospital Experiences: Presidential Address. G. F. Powers —p. 365.

*Occurrence of Complications in Scarlet Fever Treated with Penicillin, Antitoxin and Gamma Globulin. J. F. Landon and N. Greenfiel —p. 380.

Salmonella Derby Meningitis: Report of Case of Two Month Old Infant K. Schweig,, F. C. Green and A. Nathan.—p. 384.

Toe Reflexes in Infancy and Development of Voluntary Control. E. F. *Gentry and C. A. Aldrich.—p. 389.*

Studies on Relation of Hemolytic Streptococcus to Rheumatic Fever. *I. Review of Serologic Literature. T. N. Harris.—p. 411.*

Scarlet Fever.—Landon and Greenfield treated 245 patients with scarlet fever with penicillin, gamma globulin and scarlet fever Streptococcus antitoxin U. S. P. in rotation. There were three and one-half times as many complications in the group treated with penicillin as in the group receiving gamma globulin and five times as many complications in the group treated with antitoxin as in the group receiving gamma globulin. There were over twice as many severely ill patients in those treated with antitoxin as in those receiving penicillin and over three times as many as in the group receiving gamma globulin. In patients in whom complications developed there was no indication of any relation to the severity of the disease. The percentage of throat cultures showing hemolytic streptococci at discharge in the group treated with gamma globulin was 82 per cent, in the group treated with penicillin 54 per cent and in the group receiving antitoxin 35 per cent, thus suggesting the ineffectiveness of gamma globulin in clearing the throat of hemolytic streptococci. The comparison of the three agents reveals that gamma globulin is the most effective in reducing the number of early and late complications in scarlet fever, despite the fact that it is relatively ineffective in clearing the throat of the hemolytic streptococci as compared with the other two agents. This work tends to confirm the observations of a previous study.

American Journal of Medicine, New York

6:405-534 (April) 1949

*Aureomycin in Typhus and Brucellosis. V. Knight, F. Ruiz-Sanchez, A. Ruiz-Sanchez and W. McDermott.—p. 407.

Effect of Streptomycin Therapy on Bacterial Flora of Throat. C. P. Miller and M. Bohnhoff.—p. 417.

Immunization of Human Beings with Group A Hemolytic Streptococci. L. A. Rantz, E. Randall and H. H. Rantz.—p. 424.

*Treatment of Acute Rheumatic Fever with Aspirin with Special Reference to Biochemical Changes. W. S. Hoffman, M. Pomeranz, I. F. *Volini and C. Nobe.—p. 433.*

Relative Infectivity of Blood and Cerebrospinal Fluid in Secondary Syphilis. C. N. Frazier and H. C. Pian.—p.. 443.

Penicillin in Oil and Beeswax in Treatment of *Syphilis in Clinic* Patients. H. Eisenberg and F. Plotke.—p. 449.

Auricular Flutter *in Association with Myocardial Infarction:* Its Prognosis and Management. J. M. Askey.—p. 453.

Role of Tonsillectomy in Management of Recurrent Streptococcal Sore Throat, Rheumatic Fever and Glomerulonephritis. M. Michael Jr. —p. 462.

Aureomycin in Typhus and Brucellosis.—Knight and associates report that in the summer of 1948 in the course of an investigation of the antimicrobial therapy of typhoid fever with various drugs, 11 patients with typhus and 5 with brucellosis were treated with aureomycin. The studies were conducted in Mexico. The administration of aureomycin to 11 patients with typhus (presumably murine) was followed in every instance by prompt defervescence and complete recovery. No instances of relapse were observed, although in 7 cases the total period of antimicrobial therapy was limited to forty-eight hours or less. *In 4 patients with acute brucellosis,* 1 of whom had meningoencephalitis, a similar prompt disappearance of the manifestations of the infection occurred soon after the start of aureomycin therapy. Since this material was submitted for publication, 8 additional patients with typhus have been successfully treated with aureomycin. Seven of these patients were treated with oral doses ranging from 100 to 160 mg. per kilogram of body weight per day, for intervals of thirty-six to forty-eight hours. These patients all showed rapid improvement after therapy. One patient in the eighth day of her illness received aureomycin intravenously. She was given doses of 200 mg. at eight hour intervals during the first day and at twelve hour intervals during the second day. Improvement was rapid; by the time the last dose was administered she was asymptomatic and permanently afebrile. Other patients were treated with lower oral dosages. It appears that the lowest fully effective dose may lie somewhere between 50 and 100 mg. per kilogram per day for a short interval of therapy.

Acetylsalicylic Acid in Rheumatic Fever.—Hoffman and associates present observations on 80 adult patients with acute rheumatic fever who were treated with acetylsalicylic acid until disappearance of clinical symptoms. Of 65 patients started with control tablets of acetylsalicylic acid, 8 complained of gastric distress following ingestion of the drug. This distress disappeared when tablets which contained acetylsalicylic acid and aluminum hydroxide were taken. For most of the period of therapy in all patients, acetylsalicylic acid plus aluminum hydroxide was administered. Some symptoms of salicylism occurred in almost all patients when the plasma salicylate level was more than 30 mg. per hundred cubic centimeters. Only 41 patients could be maintained at this level; 39 had to be given doses that produced levels under 25 mg. per hundred cubic centimeters. The sedimentation rate subsided to normal in a slightly larger proportion of patients in the group with high plasma salicylate levels. The prothrombin concentration was only slightly affected by acetylsalicylic acid therapy. A moderate fall in the serum bicarbonate level occurred in most cases, associated with an elevated serum chloride and a slightly diminished serum sodium. The blood p_H was usually normal. The urine was usually acid. It is believed that salicylate produces a primary hyperpnea with alkalosis but that the accumulated salicylate produces a fixed acid acidosis and that the two effects are mutually compensatory. The apparent salicylate clearance after acetylsalicylic acid therapy is only about 3 per cent of the creatinine clearance when the urine is highly acid. It increases three to eight times when the urine is alkalinized with sodium bicarbonate. Most of this increase is in free salicylate. Alkalinization is therefore of prime importance in the treatment of salicylate poisoning.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

61:443-590 (April) 1949

Hemosiderosis of Lung Due to Mitral Disease: Report of 6 Cases Simulating Pneumoconiosis. E. P. Pendergrass, E. L. Lame and H. W. Ostrum.—p. 443.
Apical Form of Bronchopulmonary Cancer. N. Romano and R. Eyherabide.—p. 457.
Case of Carcinosarcoma of Esophagus. A. P. Stout, G. H. Humphreys II and L. A. Rottenberg.—p. 461.
*Mass Roentgenologic Survey of Gastrointestinal Tract to Detect Cancer of Stomach. S. Moore.—p. 470.
Paraplegic Neuroarthropathy. J. Solovay and H. U. Solovay.—p. 475.
Double Contour, Cupping and Spurring in Roentgenogram of Long Bones in Infants. K. Glaser.—p. 482.
Sesamoid Bones of Hands and Feet. C. A. Hubay.—p. 493.
Occupational Calcareous Peritendinitis of Feet: Case Report. C. F. Miller.—p. 506.
Kaposi's Sarcoma: Report of 2 Cases. W. H. Boone and E. A. Kratzman.—p. 511.
Radium Therapy for Carcinoma of Bartholin's Glands. H. H. Bowing, R. E. Fricke and T. J. Kennedy.—p. 517.
Effects of Repeated Low Doses of Neutrons on Estrous Cycle of White Rat. J. L. Leitch, D. M. Gay and G. A. Neville.—p. 530.
Pharmacologic Reactions of Serums and Drugs Irradiated with Roentgen Rays of Varying Wavelength. D. I. Macht and M. Ostro.—p. 534.
Thimble Chamber Calibration on Soft Roentgen Rays. F. H. Day.—p. 543.
Negative Feedback Dosage Rate Meter Using Small Ionization Chamber. H. E. Johns, E. K. Darby and J. J. S. Hamilton.—p. 550.

Roentgenologic Survey in Detection of Gastrointestinal Cancer.—Moore reviews 30,985 examinations of the gastrointestinal tract performed from 1916 to 1947, inclusive. Roentgen diagnosis of carcinoma of the gastrointestinal tract was made in 1,352 of a total of 14,337 pathologic cases. Reviewing this material made it evident that the stomach will not lend itself to mass roentgenologic surveys for many reasons. The time and labor required would be great. The fact that there is a high incidence of cancer in the other segments of the gastrointestinal tract is often ignored, yet if all gastric cancers were diagnosed early by mass methods there would remain a large number of cancers elsewhere in the tract that would escape detection. The material reviewed consisted largely of patients with some symptoms ascribable to the alimentary tract; yet, the percentage of cancer was low. The author concludes that gastrointestinal examination is unsuitable for mechanization such as would be the case with mass survey technics. Gastric cancer of the one type which seems to be suitable for detection by mass survey methods comprises but a small part of the problem.

American Journal of Surgery, New York

77:543-678 (May) 1949

Vagina in Reconstructive Surgery: Histologic Study of Its Structural Components. J. V. Ricci, J. R. Lisa, C. H. Thom Jr. and W. Kron.—p. 547.
Cesarean Sections—1937 to 1946. I. Daichman and W. Pomerance.—p. 555.
Pneumatosis Intestinalis: Roentgen Diagnosis and Surgical Management. A. I. Gazin, W. S. Brooke, H. H. Lerner and P. B. Price.—p. 563.
Malignant Tumors of Small Intestine. I. E. Siris.—p. 573.
Does Bowel Prevent Outward Diffusion of Gas from Within Balloon of Intestinal Tubes? Experimental Study. M. O. Cantor, E. R. Phelps and R. H. Esling.—p. 585.
Further Study of Suspensory Muscle of Duodenum. J. C. Haley and J. H. Perry.—p. 590.
Cholecystostomy: Study of Patients Ten to Sixteen Years Later. J. G. Donald and W. T. Fitts Jr.—p. 596.
Further Studies in Articular Replacement. S. S. Hudack and J. W. Blunt Jr.—p. 600.
Surgical Analysis of 124 Cases of Proven Acute Cholecystitis. V. D'Ingianni, I. L. Fontenelle and H. A. D'Ingianni.—p. 608.
Pheochromocytoma. R. F. Hedin and R. V. Sherman.—p. 614.
Review of Meckel's Diverticulum: Report of 4 Cases. W. Fry.—p. 620.
Surgical Aspects of Peripheral Vascular Disease. G. H. Martin.—p. 624.
Glycerite of Hydrogen Peroxide: Comparison of Its Bacteriotoxic Effect on Clostridia with That of Other Antiseptics. E. A. Brown, R. E. Skiffington and W. B. Krabek.—p. 630.
Surgical Management of Moribund Burn Patient. L. W. Eisenstodt.—p. 634.
Biliary Surgery Through Transverse Incision. V. J. Hittner.—p. 640.

American Review of Tuberculosis, New York

59:353-468 (April) 1949

Diagnosis and Treatment of Lung Tumor. R. Adams.—p. 353.
*Observations on Causes of Dyspnea in Chronic Pulmonary Granulomatosis in Beryllium Workers. R. A. Bruce, F. W. Lovejoy Jr., G. B. Brothers and T. Velasquez.—p. 364.
Role of Pulmonary Cavitation in Development of Bacterial Resistance to Streptomycin. W. L. Howard, F. Maresh, E. E. Mueller and others.—p. 391.
*Sensitivity of Tubercle Bacilli to Streptomycin: Influence of Various Factors Upon Emergence of Resistant Strains. K. S. Howlett Jr., J. B. O'Connor, J. F. Sadusk Jr. and others.—p. 402.
Coexisting Disseminated Coccidioidomycosis and Tuberculosis: Report of Case. G. M. Firestone and E. S. Benson.—p. 415.
Viability of Tubercle Bacilli in Embalmed Human Lung Tissue. G. M. Meade and W. Steenken Jr.—p. 429.
Acquired Resistance of M. Tuberculosis to Streptomycin in Vitro and Its Behavior in Experimental Infections. E. W. Emmart, W. T. McClosky, M. I. Smith and J. E. Lieberman.—p. 438.
Routine Examination of Sputum for Acid-Fast Bacilli. D. G. Freiman and M. Pinner.—p. 449.
Study of Bacteriostatic and Bactericidal Activity of Promin, Diasone, Sulfathiazole, Sulfaguanidine and Streptomycin on H-37V. Strain of M. Tuberculosis. K. T. Sasano.—p. 461.

Dyspnea in Pulmonary Granulomatosis in Beryllium Workers.—Bruce and associates report observations on the cardiorespiratory function of 6 patients with chronic delayed pulmonary granulomatosis due to beryllium. Four of these patients had contact with beryllium compounds under industrial working conditions. The other 2 were "neighborhood cases"; the patients had had contact with beryllium compounds only from atmospheric contamination in close proximity to a manufacturing plant. The duration of respiratory distress in these 6 patients ranged between one and six years. The etiology was presumed in most cases by exclusion of all differential diagnoses and was established in 1 patient by identification of trace amounts of beryllium in the urine, and in another patient beryllium was recovered from kidney stones. These patients were hospitalized for two weeks to three months. Breathing capacity was measured; bronchospirometry was performed; measurements of alveolar pressure-velocity relationships were obtained; blood oxygen and carbon dioxide contents and capacities were measured. Cardiac studies included serial electrocardiograms with complete chest leads, ballistocardiograms, pneumocardiograms and intracardiac pressure-pulse recordings. Venous pressure and circulation times were also measured. The results of these studies are essentially in accord with those observed by other investigators of a similar group of patients. The main deviation from normal is the hyperventilation. Diminished arterial oxygen saturation is a function of abnormally increased alveolar-arterial gradient for oxygen and contracted lung volume, particularly complementary air. One of these patients exhibited polycythemia as a compensatory mechanism. Various stages of cor pulmonale, including congestive heart failure due to increased pulmonary resistance, were observed. An unusual response to intravenous digoxin and the lack of benefit from cytochrome C therapy are recorded. The authors call attention to variations in response to exercise and similarities to functional impairment of other chronic pulmonary disease.

Streptomycin-Resistant Tubercle Bacilli.—Howlett and associates call attention to the frequent emergence of streptomycin-resistant strains of tubercle bacilli in tuberculous patients treated with streptomycin. Interest thus far has been largely concentrated on variations in the daily dose, the frequency of administration and the total duration of streptomycin treatment. Little attention has been given to possible influences inherent in the patient or in the tuberculous disease. The chief purpose of the investigation reported here was to survey two relationships: (1) between the incidence of streptomycin-resistant tubercle bacilli and the treatment regimen employed and (2) between the incidence of streptomycin-resistant tubercle bacilli and the type of pulmonary tuberculosis being treated. In a group of 28 patients treated on a regimen of 1.8 or 2.0 Gm. of streptomycin daily for one hundred and twenty days, resistant strains of tubercle bacilli eventually occurred in 8. In a group of 47 patients treated on a regimen of 1.0 Gm. of streptomycin daily for forty-two days (later revised to 20 mg. per kg. of body weight daily for forty-five days), resistant strains eventually occurred in 13. A reduction in the duration of streptomycin treatment from one hundred and twenty days to forty-two (or forty-five) days has been considerably less successful than had been hoped in reducing the incidence of resistant tubercle bacilli. A correlation has been observed between the incidence of resistant tubercle bacilli and the type of tuberculosis treated. Resistant strains have emerged in a high proportion of patients who had caseation or cavity in pretreatment roentgenograms. In a group of 56 such patients, treated on the several regimens employed in this study, strains uninhibited by 10 micrograms of streptomycin per cubic centimeter of culture medium eventually occurred in 33. In contrast, and regardless of the treatment regimen employed, strains uninhibited by 10 micrograms per cubic centimeter or less have occurred thus far in none of 31 patients who had no frankly caseous or cavernous lesions prior to treatment.

Archives of Ophthalmology, Chicago

41:253-392 (March) 1949

Pharmacology and Toxicology of Cornea: Contemporary Concepts. K. C. Swan.—p. 253.
*Inheritance of Arachnodactyly, Ectopia Lentis and Other Congenital Anomalies (Marfan's Syndrome) in E. Family. F. C. Lutman and J. V. Neel.—p. 276.
Morphologic Changes in Cells of Corneal Epithelium in Wound Healing. W. Buschke.—p. 306.
Myxosarcoma of Eyelid. W. Moehle.—p. 317.
Motais-Parinaud Type of Operation for Ptosis: Report on 35 Cases. R. N. Berke.—p. 324.
Progressive Muscular Dystrophy Involving Extraocular Muscles: Report of Case. S. Gartner and E. Billet.—p. 334.
Traumatic Choroiditis: Review of Literature and Report of 10 Cases. P. Tower.—p. 341.

Congenital Anomalies.—Lutman and Neel present the pedigree of a family of 40 persons, 17 of whom probably had Marfan's syndrome which is characterized by arachnodactyly, ectopia lentis, cardiac abnormalities and other congenital defects. There was a great variability in the expression of the syndrome in the affected members; of the 16 persons, exclusive of the male progenitor of the line, 5 exhibited the triad of arachnodactyly, dislocated lenses and cardiac abnormalities; 9 exhibited only two aspects of the triad, while in the remaining 2 the diagnosis rested on the observation of a single component of the triad. Some of the members were so mildly affected that the diagnosis would be unsuspected or in doubt were it not for their genetic background. Ocular anomalies observed in all persons studied, in addition to either ectopia lentis or coloboma of the lens, were abnormal zonular fibers, an iris lacking in the usual surface trabecula and crypts, deficiencies of uveal pigment, particularly at the periphery of the iris, and amblyopia. In several cases these were accompanied with other ocular defects. The syndrome is inherited as though due to one or more dominant autosomal genes. Although a final decision is not possible, the bulk of the evidence suggests that the entire syndrome may be due to one gene only, the expression of which is greatly influenced by other genetic and possibly environmental factors. This syndrome would quickly disappear through natural selection unless there was a relatively high mutation rate from normal to the gene responsible for the syndrome. The many isolated cases which have been reported are thought for the most part to represent results of this mutation process.

Archives of Otolaryngology, Chicago

49:335-446 (April) 1949

Hydrodynamics and Hearing: I. Operative Relief of Otosclerotic and Nonotosclerotic Deafness and Its Relationship to Hydrodynamic Hypothesis of Hearing; Suggested Explanation for (*a*) Intimate Association of Organs of Balance and Organ of Hearing and for (*b*) Function of Incus. O. Popper.—p. 335.
Transtympanic Approach and Fenestration: II. Current Technic. O. Popper.—p. 350.
Acoustic, Vestibular and Other Problems Concerning Otosclerosis and Its Surgical Treatment According to Popper's Method: I. Popper's Operation for Otosclerosis. R. Lund.—p. 380.
Id.: II. Acoustic Function Before and After Operation for Otosclerosis. H. Ewertsen.—p. 393.
Id.: III. Vestibular Function Prior to and Following Operation for Otosclerosis. H. Rasmussen.—p. 402.
Id.: IV. Biochemical Conditions in Patients with Otosclerosis. N. Riskaer.—p. 414.
Id.: V. Conditions of External Auditory Meatus and Tympanic Membrane in Patients with Otosclerosis. S. Selsø.—p. 420.
Actinomycosis Involving Ethmoid and Maxillary Sinuses: Report of Case. R. B. Lewy and E. L. Manning.—p. 423.
Interpretation of Hearing Tests. S. R. Guild.—p. 431.

Archives of Pathology, Chicago

47:205-306 (March) 1949

Formation of Hemosiderin and Hematoidin After Traumatic and Spontaneous Cerebral Hemorrhages. G. Strassmann.—p. 205.
Significance of Ehrlich's Reaction in Cases of Melanuria. A. J. Lea.—p. 211.
Nonparasitic, Noncancerous Cystic Tumors of Spleen. W. L. Bostick and S. P. Lucia.—p. 215.
Nuclear Size in Tetanized and in Curarized Skeletal Muscle. R. Altschul—p. 223.
Organoid Differentiation of Fetal Lung: Histologic Study of Differentiation of Mammalian Fetal Lung in Utero and in Transplants. W. R. Waddell.—p. 227.
*Lesions Induced in Rabbits by Cholesterol Feeding, with Special Reference to Their Origin. A. Kuntz and N. M. Sulkin.—p. 248.
The Phenomenon of Leukergy. L. Fleck and Z. Murczynska.—p. 261.
Changes in Capsule of Lymph Node in Experimental Hyperplasia. W. J Furuta.—p. 273.
Distribution of Lymphatics of Human Kidney as Shown in Case of Carcinomatous Permeation. A. J. Rawson.—p. 283.

Lesions Induced in Rabbits by Cholesterol Feeding.—Kuntz and Sulkin found that in rabbits fed cholesterol daily in addition to a rabbit chow hypercholesteremia and hypertension developed. In those fed 1 Gm. of cholesterol daily, atherosclerotic lesions appeared in the aorta and other large arteries within thirty days. As the process advanced, lesions appeared also in small arteries. The initial atheroma consisited mainly of a few foam cells in the intima. As the number of foam cells increased, a thick intimal plaque was formed. Collagenous fibers soon appeared in the plaque. Associated with these fibers were some fibroblasts. The late lesion included a large percentage of fibrous tissue, including numerous fibroblasts. In sections the late intimal plaque exhibited stratification due to alternate arrangement of the fibrous tissue and the foam cells. Early atherosclerotic lesions were limited to the intima;

many of the older lesions extended into the media. The data support the assumption that the foam cells observed in atherosclerotic lesions are derived locally from the endothelium. The fibrous tissue is derived from connective tissue elements of the intima and the media. Xanthomatosis occurred in all rabbits with advanced atherosclerosis. The data relative to the origin of the xanthoma cells support the assumption that these also arise locally from the mesenchymal epithelium and from undifferentiated cells of the synovial membranes. In rabbits with advanced atherosclerosis, lesions characterized by foam cells developed also in viscera, particularly in the liver, spleen, adrenal glands and kidneys. There also the foam cells appeared to arise locally. The autonomic ganglions and nerves exhibited a succession of alterations which in the later phases of cholesterol feeding suggested functional depression of the cells.

Connecticut State Medical Journal, Hartford

13:409-512 (May) 1949

Management of Acute Injuries of Hand. M. L. Mason.—p. 414.
Some Reactions to Anti-Biotics. L. Goldman.—p. 420.
Bronchopulmonary Segments and Their Relation to Disease. R. H. Jordan.—p. 424.
Dynamic Therapeutics in Chronic Disease Pay Dividends. H. A. Rusk.—p. 431.
Brucellosis Treated by Aureomycin: Case Report. H. Boyd and J. Prignano.—p. 435.
Cancer in Lactating Breast. P. G. McLellan.—p. 437.
Signs and Portents in Medicine. J. E. Bryan.—p. 441.

Journal of Bone and Joint Surgery, Boston

31-A:225-458 (April) 1949. **Partial Index**

Tendon Transfers and Arthrodeses in Combined Median and Ulnar Nerve Paralysis. J. W. Littler.—p. 225.
Surgical Approaches to Shoulder Joint. L. C. Abbott, J. B. deC. M. Saunders, H. Hagey and E. W. Jones Jr.—p. 235.
Tuberculosis of Spine: Analysis of Cases Treated Surgically. D. M. Bosworth and J. Levine.—p. 267.
Spondylitis, Pathologic Ossification, and Calcification Associated with Spinal-Cord Injury. D. J. Abramson and S. Kamberg.—p. 275.
Myositis Ossificans in Paraplegics. L. F. Miller and C. J. O'Neill.—p. 283.
Spontaneous Sacro-Iliac Obliteration in Patients with Tuberculosis. A. S. Isaacson and W. M. Whitehouse.—p. 306.
Blade-Plate Fixation in Non-Union and in Complicated Fractures of Supracondylar Region of Femur. A. R. Altenberg and R. L. Shorkey.—p. 312.
Etiology of Congenital Dislocation of Hip. C. E. Badgley.—p. 341.
Congenital Dysplasia of Hip Joint: Relationship Between Congenital Subluxation and Congenital Dislocation. V. L. Hart.—p. 357.
Injuries of Lateral Ligaments of Ankle: Clinical and Experimental Study. M. H. Leonard.—p. 373.
Some Obstetrical Injuries to Long Bones. S. T. Snedecor and H. B. Wilson.—p. 378.
Mortised Transfacet Bone Block for Lumbosacral Fusion. E. B. McBride.—p. 385.
Aspects of Physical Reconditioning. M. J. Stewart.—p. 394.
Pseudarthrosis Following Spine Fusion. W. A. L. Thompson and E. L. Ralston.—p. 400.
Muscle Transplantation for Triceps Palsy: Technic of Utilizing Latissimus Dorsi. P. H. Harmon.—p. 409.
*Calcification of Bursae of Knee. T. Norley and W. H. Bickel.—p. 417.
Amputation for Discrepancy of Limb Length in Tuberculosis of Hip. F. A. Chandler and T. A. Fox.—p. 420.
Successful Prosthesis for Sacro-Iliac Disarticulation (Hemipelvectomy). R. A. Wise.—p. 426.
Treatment of Congenital Club-Foot: Nine Years' Experience with Modification of Denis Browne Method and Splint. S. A. Thomson.—p. 431.

Calcification of Bursae of Knee.—According to Norley and Bickel a search of the literature failed to disclose any report of calcification of the bursae of the knees. Brantigan and Voshell stated that calcification of the superior bursa beneath the tibial collateral ligament might "account for certain cases of Pellegrini-Stieda disease." Search of the records of the Mayo Clinic yielded 8 cases of calcification of the bursae of the knee. The patients complained of progressive pain on motion, of swelling and of limited motion. Physical examination usually revealed a tender swelling over the involved bursa. Calcification within the bursa was not usually suspected until its presence was revealed in the roentgenogram. One patient had recurrent painless swelling without any localizing signs, and the roentgenograms revealed calcification of the bursa over the medial condyle of the femur. Four patients gave a history of injury and most commonly of repeated trauma over a period of years. Locations of the calcified bursae were: prepatellar bursae in 2 cases, infrapatellar bursa in 1, bursae over the medial femoral condyle in 4 and bursa over the lateral epicondyle in 1. Needling and injection of procaine hydrochloride or surgical excision may be curative; the more conservative means should be used first if the symptoms are not too severe.

Journal of Clin. Endocrinology, Springfield, Ill.

9:301-402 (April) 1949. **Partial Index**

Estrogen-Producing Sertoli Cell Tumors (Androblastoma Tubulare Lipoides) of Human Testis and Ovary. Homologous Ovarian and Testicular Tumors. III. G. Teilum.—p. 301.
Cortical Steroid Excretion in Edema of Pregnancy, Pre-Eclampsia and Essential Hypertension. L. Tobian Jr.—p. 319.
*Therapeutic Studies in Hyperthyroidism: Propylthiouracil. P. Starr, D. W. Petit, L. Meister and R. L. Stirrett.—p. 330.
Use of Tracer Doses of Radioactive Iodine, I^{131}, in Study of Normal and Disordered Thyroid Function in Man. S. C. Werner, E. H. Quimby and C. Schmidt.—p. 342.
Antihormone Formation Complicating Pituitary Gonadotropin Therapy in Infertile Men. II. Effect on Number of Sperm, Morphology of Testis and Urinary Gonadotropins. E. C. Jungck, W. O. Maddock, C. G. Heller and W. O. Nelson.—p. 355.
Relative Independence of Sodium and Chloride Excretion. J. W. Goldzieher and G. C. H. Stone.—p. 368.

Propylthiouracil in Hyperthyroidism.—Starr and co-workers treated 40 patients having varieties of hyperthyroidism with propylthiouracil. The average duration of treatment of the entire series was six and one-half months, ranging from one to fifteen months. The dosage of the drug ranged from 150 to 600 mg. daily. Hyperthyroidism was controlled in 21 of 28 patients for from one to ten months during the administration of the drug. The disease was not completely controlled, as indicated by abnormal protein-bound iodine levels in the serum in 7 of 28 patients. Granulocytopenia, evidenced by polymorphonuclear cells ranging from 14 to 48 per cent, was found in 6 of the 40 patients to whom the drug was given, indicating a toxic effect on the bone marrow in 15 per cent. Medication was not interrupted in any patient because of the granulocytopenia. The initial fall of protein-bound blood iodine during the first twenty-four days of treatment was not significantly greater during therapy with 600 mg. of propylthiouracil a day than with 150 mg. a day. A relapse, judged by both clinical and chemical observations, occurred in nearly every case in which administration of the drug was discontinued, even when control had been complete chemically for as long as ten months. General use of the drug in preparation for secondary thyroidectomy is justified. Its use as a prolonged treatment in the hope that hyperthyroidism will be cured or that an indefinite remission will be induced seems unjustified.

Journal of Experimental Medicine, New York

89:369-460 (April) 1949. **Partial Index**

Immobilization of Treponema Pallidum in Vitro by Antibody Produced in Syphilitic Infection. R. A. Nelson Jr. and M. M. Mayer.—p. 369.
Studies on Acute Disseminated Encephalomyelitis Produced Experimentally in Rhesus Monkeys. IV. Disseminated Encephalomyelitis Produced in Monkeys with Their Own Brain Tissue. E. A. Kabat, A. Wolf and A. E. Bezer.—p. 395.
Additive Effects of Certain Transforming Agents from Some Variants of Pneumococcus. H. E. Taylor.—p. 399.
Electron Microscope Study of Salivary Gland Chromosomes by Replica Method. S. L. Palay and A. Claude.—p. 431.
Type-Specific Protein from Pneumococcus. R. Austrian and C. M. MacLeod.—p. 439.

89:461-560 (May) 1949

Studies on Mechanism of Shwartzman Phenomenon. L. Thomas and C. A. Stetson.—p. 461.
Effect of Lithium Periodate on Crystalline Bovine Serum Albumin. W. F. Goebel and G. E. Perlmann.—p. 479.
Mechanism of Active Cerebral Immunity to Equine Encephalomyelitis Virus. I. Influence of Rate of Viral Multiplication. R. W. Schlesinger.—p. 491.
Id. II. Local Antigenic Booster Effect of Challenge Inoculum. R. W. Schlesinger.—p. 507.
Nutrition of Host and Natural Resistance to Infection. IV. Capability of Double Strain Inoculation Test to Reveal Genetically Determined Differences in Natural Resistance to Infection. H. A. Schneider.—p. 529.
Diffuse Glomerulonephritis Produced in Rabbits by Massive Injections of Bovine Serum Gamma Globulin. R. H. More and D. Waugh.—p. 541.
Cardiac Lesions Produced in Rabbits by Massive Injections of Bovine Serum Gamma Globulin. R. H. More, D. Waugh and S. D. Kobernick.—p. 555.

Journal of Nervous and Mental Disease, New York

109:291-382 (April) 1949

Early Reversible Paranoiac Reactions: Detailed Study of Six Case Histories and Eight Cases. H. Rosen and H. E. Kiene.—p. 291.
Effect of Alpha: Beta-Dihydroxy-Gamma-(2-Methylphenoxy) Propane (Lissephen) on Excitation of Motor Cortex and Conduction Through the Pyramids. I. Finkelman and N. B. Dobin.—p. 323.
Action of Alpha: Beta-Dihydroxy-Gamma-(2-Methylphenoxy)-Propane (Lissephen) on Peripheral Nerves. I. Finkelman and A. J. Arieff.—p. 326.
Psychobiologic Dysfunction in Children. J. R. Jacobson and H. G. Pratt.—p. 330.
*Sedative Insulin Treatment of Anxiety in Anxiety Neurosis. G. J. Martin.—p. 347.

Sedative Insulin in Anxiety Neurosis.—Martin treated 210 patients with anxiety neurosis with insulin. A control group of 170 similar cases was studied. Only the more easily observed symptoms of anxiety such as tremulousness, restlessness, apprehension, hyperhidrosis, insomnia and anorexia were considered within the scope of the author's study. The 210 experimental patients received 5,918 treatments of insulin at an average dosage level of 55 units. Most patients received between 30 and 40 treatments. The patient was given an initial dose of 10 units of insulin and this was increased 10 units daily until a maximum tolerated dose of between 55 and 70 units was reached. The patient was then maintained on this dose until no further improvement was noted. Both the experimental and the control group participated in the general psychotherapeutic program designed for open ward psychiatric patients. The experimental group showed the greatest amount of improvement in all studies. The less predisposed patients with an illness of five to ten months' duration, starting in combat or being aggravated by combat, responded best. Sedative insulin is considered only a small item in the general treatment program, but when used within the program it has definite therapeutic value. Sedative insulin afforded a standard, simple, easily managed adjunct to therapy. It is suggested that a satisfactory sedative insulin program could be devised for use on an outpatient basis or in the general civilian hospital.

Journal of Pediatrics, St. Louis

34:393-528 (April) 1949

Effect of Milk Supplements on Growth of Children with Nutritive Failure: The Wetzel Grid Findings. T. D. Spies and S. Dreizen.—p. 393.
Antihistaminic Drugs in Pediatric Allergy. L. H. Criep and T. Aaron.—p. 414.
*Leukemia in Childhood: Clinical and Roentgenographic Study of Seventy-Two Cases. J. H. Dale Jr.—p. 421.
Intravenous Procaine in Children. D. Schrum.—p. 433.
Methyl Testosterone in Treatment of Premature Infants. J. Hardy and L. Wilkins.—p. 439.
Carbohydrate Supplements (Lactose and Starch Hydrolysates) in Infant Feeding: Blood Sugar Changes Following Administration of Carbohydrate Supplements in Various Milk Media. S. Natelson, M. Sherman and B. Kramer.—p. 443.
Fungus Studies in Atopic Dermatitis: Failure to Demonstrate Pathogenic Fungi in the Lesions. H. H. Perlman.—p. 458.
*Fluorescein Circulation Time in Normal and Pathologic Conditions in Infants and Children, Including Various Types of Congenital Malformations of the Heart. B. M. Gasul, J. J. Marino and J. R. Christian.—p. 460.
Amelia: Review of Literature and Report of Case. H. H. Pomerance and H. Soifer.—p. 465.
Solitary Renal Ectopia and Nephrotic Syndrome. R. H. Kunstadter and I. J. Shapiro.—p. 470.

Leukemia in Childhood.—Dale reports 72 infants and children, 38 boys and 34 girls, with leukemia who were observed from 1932 to 1948. The age incidence ranged from 10 months to 12¾ years. The peak was in the third year of life, and the majority of cases occurred in the first five years. Thirty-five patients died within one year and 27 within six months of the onset of symptoms. Only 3 patients survived one and one-half years or longer. The course of leukemia in childhood is characteristically acute, rapidly progressive and fatal within a short period from the onset. Childhood leukemia has no characteristic symptom complex and is often protean in its early manifestations, closely simulating many of the acute and subacute diseases of this period. The presence of fever, bone and joint swelling and tenderness, and a systolic heart murmur in the absence of lymphadenopathy, hepatomegaly and splenomegaly in some patients suggested the diagnosis of acute rheumatic fever. Sixty-nine of the patients had varying degrees of anemia at admission, and the remainder had anemia durin the course of the disease. Sternal marrow aspiration biopsies were employed in 54 patients, and in all abnormal leukocytes were demonstrated. The marrow was hyperplastic in the majority of cases with a depression of erythropoietic tissue paralleling the peripheral anemia. Osseous changes in childhood leukemia, although frequent, are not specific. A transverse band of diminished density in the metaphyses of the long bones was the most frequently observed lesion. Osteolysis was next in order, and periosteal elevation with new bone formation was the third most frequent roentgenographic change. Roentgenologic examination of the skeletal system, although not a specific or reliable as sternal marrow aspiration, aids materiall in the detection of osseous changes suggestive of abnorma marrow activity and points to the necessity for a thorougl hematologic study of the patient. Roentgen examination of th knee area provides a helpful screening technic in the investigation of all suspected cases of leukemia.

Fluorescein Circulation Time.—Gasul and co-worker measured the fluorescein circulation time, i. e., the time betwee the injection of sodium fluorescein into the antecubital vei and the first appearance of the dye on the patient's lips, in 10 patients between 15 days and 13 years of age, 57 of whom ha demonstrable cardiac disease, 50 of whom had no demonstrabl cardiac disease. The calculated dose of the test substance wa approximately 0.7 cc. per 10 pounds (5 Kg.) of body weigh In the normal noncardiac group, the average circulation tim from the neonatal period through 2 years of age was 6.5 second From 3 to 13 years, the average was 8.5 seconds. In tetralog of Fallot where the aorta is dextraposed, or in complete trans position of the great vessels where the aorta comes off th right ventricle, as well as in triscupid atresia with an inte auricular defect, the fluorescein circulation time is shortene to an average of 3.7 seconds. The fluorescein circulation time i appreciably altered in interauricular or interventricular sept defects or in patent ductus Botalli, coarctation of the aort or Lutembacher's syndrome. The circulation time is not appreci ably altered in acute or convalescent rheumatic heart diseas except in congestive heart failure, where it is definitely pro longed, with an average of 17.7 seconds as compared with a average of 9.2 seconds in the compensated cases. The fluoresce circulation time in infancy and childhood is a simple, nontoxi inexpensive, objective procedure.

Military Surgeon, Washington, D. C.

104:331-414 (May) 1949. Partial Index

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Fundamental Questions in Intestinal Obstruction. W. F. Bower—p. 341.
Newer Concepts with Reference to Movement of Sick and Wounded b Air. K. E. Pletcher.—p. 344.
Ocular Manifestations of Intracranial Injury. J. G. Bryson.—p. 34
Promotion of Healing Following Intestinal Surgery. E. J. Poth.—p. 35
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Intestinal Parasites in Prison Population. R. L. Lawrence and J. Hudgens.—p. 371.
Effect of Malnutrition on Calcification and Growth of Teeth Durin Childhood. H. C. Largeman.—p. 373.

Nebraska State Medical Journal, Lincoln

34:117-156 (April) 1949

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34:157-200 (May) 1949

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SYMPOSIUM ON MULTIPLE INJURIES IN AUTOMOBILE ACCIDENTS

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Injuries to Spine and Pelvis. W. L. Sucha.—p. 177.
Chest Injuries. J. D. Bisgard.—p. 180.
Injuries of Abdominal Viscera. F. C. Hill.—p. 184.
Injuries of Extremities. H. F. Johnson and S. M. Bach.—p. 186.

New England Journal of Medicine, Boston

240:589-628 (April 14) 1949

Occurrence of Infection After Pulmonary Resection: Study of Effectiveness of Sulfonamides and Antibiotic Agents During Six-Year Period (1942-1947). C. C. Miller and R. H. Sweet.—p. 589.
Acquired Afibrinogenemia in Pregnancy. W. C. Moloney, W. J. Egan and A. J. Gorman.—p. 596.
Nitrate Methemoglobinemia. H. Marcus and J. R. Joffe.—p. 599.
Streptomycin in Treatment of Salmonella Enteritis in Infants. S. Ross, F. G. Burke, E. C. Rice and others.—p. 602.
Surgery in Chronic Arthritis. J. G. Kuhns.—p. 605.
(Squamous-Cell Carcinoma of Lung). Operation: Lobectomy. Acute Coronary Thrombosis.—p. 611.
Malignant Lymphoma, Reticulum-Cell-Sarcoma Type, of Testis, Stomach and Retroperitoneal Lymph Nodes.—p. 614.

240:629-668 (April 21) 1949

*Cardiac Aneurysm. M. Caplan and P. M. Sherwood.—p. 629.
Osteitis Pubis. M. Abrams, I. Sedlezky and D. B. Stearns.—p. 637.
Werner's Syndrome: Report of 2 Cases. J. Schott and S. Dann.—p. 641.
Peripheral Vascular Disease. R. R. Linton.—p. 645.
Chronic Thyroiditis, Hashimoto Type. Hyperplasia of Thyroid Gland. —p. 655.
Lower-Nephron Nephrosis.—p. 658.

Cardiac Aneurysm.—Caplan and Sherwood cite 2 patients in whom ventricular aneurysm was diagnosed during life. Formerly it was rarely recognized during life, but now it is frequently suspected before death and it no longer has the dire prognosis commonly associated with the condition in the past. Practically all the symptoms in patients with cardiac aneurysms can be attributed to the underlying cardiac lesion. The aneurysm per se is asymptomatic except for occasional development of pain in the region of the apex. The anginal syndrome of left ventricular failure is not produced by the aneurysm but is related to the coronary artery or myocardial disease. The authors discuss the increased incidence, physical and roentgen observations and clinical course of cardiac aneurysm. Certain criteria for the antemortem diagnosis, as well as the brighter outlook regarding prognosis and longevity, are stressed. Patients are not incapacitated by their cardiac aneurysms. In view of the recent emphasis on early ambulation after myocardial infarction, many patients in whom ventricular aneurysms have developed have received inadequate bed rest after the acute episode of infarction. During the period of myomalacia every precaution must be taken to support the weakened myocardium, and undoubtedly bed rest reduces the work of the heart and allows a firmer scar to develop. It will be interesting to note the effect on the incidence of rupture of ventricular aneurysm of the introduction of anticoagulant therapy for myocardial infarction. Reduction of clot formation within the aneurysm theoretically may result in a thin-walled sac that does not have the support of a firm, lamellated clot. This type, having only the pericardium as its support, tends to increase its size and is more likely to rupture. Late embolic manifestations may be prevented by anticoagulant therapy.

New Jersey Medical Society Journal, Trenton

46:223-268 (May) 1949

Diagnostic Difficulties of Non-Paralytic Poliomyelitis. H. Simon, E. L. Smith and H. O. Bell.—p. 225.
Hemochromatosis: Case Report. H. S. Read, L. M. Walker and C. B. Whims.—p. 230.
Carcinoma of Cervix. L. J. Levinson, W. M. Brams and B. Levinstone. —p. 234.
Differential Diagnosis of Peripheral Vascular Diseases. W. Redisch. —p. 238.
Importance of Sigmoidoscopy. R. A. Hopping.—p. 244.
Laboratory Diagnostic Aids for General Practitioner. T. K. Rathmell and J. P. Greeley.—p. 245.
Religion and Medicine. H. A. Murray.—p. 248.

Occupational Therapy & Rehabilitation, Baltimore

28:109-226 (April) 1949. **Partial Index**

Occupational Therapy for Lobotomy Patients. R. W. Hyde and A. C. Wood.—p. 109.
*Rehabilitation on the Job. G. F. Keatinge.—p. 125.
Eating Devices for Paraplegic Patient. H. R. Shear and A. E. Comarr. —p. 154.

Rehabilitation on the Job.—Keatinge says that although rehabilitation centers and physical therapy departments of hospitals play their part in the rehabilitation of the severely injured worker, the activities of these agencies lack the discipline of productive work, which is so important a factor in the rehabilitation of the workman. Conscious of the important part played by suitable work in rehabilitation, certain employers have set up special workshops for this purpose. In these workshops men carry out production jobs under special conditions, and although good results have been obtained, there are shortcomings. Even under good conditions the psychologic effect created by a number of injured persons working in one shop is not always good, and feelings of inferiority may develop. The employee who goes back to work with his mates is usually anxious to emulate their achievements; he is among friends and is not a "new body," as is the case in the special shop. Furthermore, the special shop is impractical in any but the organization employing great numbers of workers. Reviewing 47 cases from a factory employing 700 workers, the author says that 2 men who sustained fractures of the lower limb returned to work having lost less than seven weeks time. The leg of a patient who sustained a fracture of the patella was allowed to remain in the plaster for just over four weeks; in the man who had a Pott's fracture the length of time during which the leg was kept in a plaster case was a little more than five weeks. The men got about in their plaster cases as best they could, and as soon as they were free to do so they began to use their limbs naturally. The man who fractured his patella went back to his usual occupation as a crane driver, from which it may be inferred that there was little impairment of flexion at the knee joint. In the case of the man who had a Pott's fracture and whose work was that of a heavy laborer, arrangements were made to make a start on rough painting. In this work he was obliged to move about to some extent. Within eight weeks of his return to work he was back at his preaccident occupation, completely free from all pain or swelling and with full movement in his ankle joint. All of 44 men who had minor injuries went back to their jobs. Early return to work should always be in the surgeon's mind, and in the case of firms lacking a medical service the surgeon should himself approach the management with a view to placing their injured employees in suitable work as soon as their condition permits. The surgeon will find that industry will be ready to cooperate with him.

Ohio State Medical Journal, Columbus

45:317-428 (April) 1949

Surgical Risk in Patients with Heart Disease. P. M. Spurney.—p. 341.
Diagnosis of Herniation of Lumbar Intervertebral Disk (Nucleus Pulposus). R. E. Slemmer.—p. 345.
Objective Findings in Psychosomatic Dysfunction. C. deCourcy and J. E. Vollmer.—p. 349.
Mesenteric Commune: Report of Case. J. L. Bilton.—p. 351.
Ovarian Pregnancy: Case Report. J. P. Bolton.—p. 353.
Conservative Irradiation of Nasopharynx. H. H. Haggart.—p. 357.
Essential Dysmenorrhea—Its Pathogenesis and Treatment. L. B. Greentree.—p. 358.
Postoperative Care After Ileostomy. J. M. Walker.—p. 360.
Cystic Disease of Liver and Kidney: Report of Case. R. W. Urich. —p. 363.

Pennsylvania Medical Journal, Harrisburg

52:569-664 (March) 1949

Man Defends Himself. C. C. Dennie.—p. 585.
Vertigo: Diagnostic and Therapeutic Considerations. J. C. Yaskin.—p. 591.
Pennsylvania's School Health Program. S. J. Dickey.—p. 598.
Management of Industrial Ocular Injuries. H. M. Griffith.—p. 601.
Uterine Prolapse in Second Trimester of Pregnancy: Successful Treatment of Case. T. F. Hawkins.—p. 604.

52:665-792 (April) 1949

Physiologic Mechanisms of Psychosomatic Phenomena. S. Wolf, T. H. Holmes, H. Goodell and H. G. Wolff.—p. 681.
Nature of Emotional States That Disturb Bodily Function. O. S. English.—p. 689.
Psychosomatic Concept in General Medical Practice. E. Weiss.—p. 692.
Clinical Management of Deafness. K. M. Day.—p. 698.
Use of Propyl Thiouracil and of Radioactive Iodine. R. C. Grauer.—p. 704.
Management and Treatment of Pulmonary Tuberculosis with Streptomycin. G. E. Martin.—p. 708.
Treatment of Arthritis. R. Pemberton.—p. 712.
Significance of Symptoms and Roentgen Studies in Urinary Tract Disease. D. A. Sampson.—p. 715.
Topical Treatment of Lung Abscess. W. E. Burnett, G. P. Rosemond, H. T. Caswell and others.—p. 719.
Prostatism. E. F. Cosgrove.—p. 726.
Subdural Hematoma in Infants. J. F. Grunnagle.—p. 729.

Rhode Island Medical Journal, Providence

32:121-180 (March) 1949

X-Ray Treatment of Malignant Lymphoma. E. W. Benjamin.—p. 135.
Pathology of Malignant Lymphoma. R. J. Williams.—p. 137.
Simple Plastic Operation for Stenosed Colostomies. E. S. Cameron.—p. 138.
Diabetic Lipoidic Necrobiotic Dermatitis (Necrobiosis Lipoidica Diabeticorum Urbach). F. Ronchese and B. L. Schiff.—p. 139.
AMA's Plan of Battle: Outline of Strategy and Policies in Campaign Against Compulsory Health Insurance. C. Whitaker and L. Baxter.—p. 142.

32:181-240 (April) 1949

Radiologic Safety in Atomic Warfare. C. F. Behrens.—p. 195.
Sympathectomy—Its Role in Treatment of Vascular Disease. J. P. Eddy III.—p. 199.

Surgery, Gynecology and Obstetrics, Chicago

88:545-688 (May) 1949

Anatomic and Clinical Re-Evaluation of Camper's, Scarpa's, and *Colles' Fasciae. C. E. Tobin and J. A. Benjamin.—p. 545.*
*Gastric Resection for Esophagitis and Stricture of Acid-Peptic Origin. O. H. Wangensteen and N. L. Leven.—p. 560.
Surgical Treatment of Patent Ductus Arteriosus. W. J. Potts.—p. 571.
Anatomic Variations of Extrahepatic Biliary System as Seen by Cholangiographic Studies. N. F. Hicken, Q. B. Coray and B. Franz.—p. 577.
Rationale for Surgical Treatment of Duodenal Ulcer. R. A. Griswold.—p. 585.
*Mechanism of Intervertebral Disk Protrusion. F. H. Lewey.—p. 592.
Repair of Inguinal Hernia with External Oblique Fascia: Critical Evaluation of Results. C. W. Mayo and J. K. Keeley.—p. 603.
Surgical Treatment of Radiation Burns. J. B. Brown, F. McDowell and M. P. Fryer.—p. 609.
Imperforate Anus: Case Series and Preliminary Report on One Stage Abdominoperineal Operation. W. J. Norris, T. W. Brophy III and D. Brayton.—p. 623.
Trypsin and Thrombin Induced Venous Thrombosis and Its Prevention with Dicumarol, 3,3′ Methylenebis (4 Hydroxycoumarin). W. D. Holden, D. B. Cameron, P. J. Shea Jr. and B. W. Shaw.—p. 635.
Evaluation of Hexachlorophene and Detergents as Substitutes for Surgical Scrub: Biological Technic. W. J. Nungester, R. L. Thirlby and A. B. Vial.—p. 639.
Tendon Transplants for Irreparable Radial Nerve Paralysis. C. Scuderi.—p. 643.
Ruptured Uterus: Report of 42 Cases. J. E. Fitzgerald, A. Webster and J. E. Fields.—p. 652.
Dextran: Experimental Plasma Substitute. F. P. Turner, B. C. Butler, M. E. Smith and J. Scudder.—p. 661.

Gastric Resection for Esophagitis of Acid-Peptic Origin.—*Wangensteen and Leven say that a patient was* operated on by Wangensteen in September 1939 for a massive hemorrhage from a duodenal ulcer. The patient had esophagitis, for which frequent esophageal dilatations had been done over a period of four years. An unexpected result of this operation was that dilatation of the esophageal stricture became unnecessary. Three years later, the same sequence of events was observed in another patient undergoing gastric resection for a gastrojejunal ulcer. This patient also had esophagitis necessitating esophageal dilatation. Therefore, when a third patient presented herself with a congenitally short esophagus, an esophageal stricture and gastric hemorrhage, it was reasoned that the stricture in this instance too might be occasioned by the regurgitation of hydrochloric acid into the lower reaches of the esophagus. A dramatic improvement followed gastric resection and helped confirm the impression that esophagitis and esophageal stricture might well be a consequence of the acid-peptic digestive mixture in the same manner that duodental ulcer is. Two additional patients with strictures fairly high in the esophagus were persuaded to accept the same operative procedure. A sixth case concerned a boy of 17 years with a stricture of the lower half of the esophagus. No ulcer could be demonstrated, but the gastric acids were high. Gastric resection was followed by complete relief of the difficulty in swallowing. These observations constitute evidence that esophagitis is a manifestation of ulcer disease.

Mechanism of Intervertebral Disk Protrusion.—Lewey says that the terms hidden or bulging disk and ruptured, herniating, protruded and slipped disk are sometimes used as if interchangeable. In reality, they denote different conditions. The author analyzes 40 cases of disk removal for sciatica. These cases represent part of a group of 169. Histologic examination of the 169 disks removed at operation and of 20 controls seems to suggest that the pathologic findings may be grouped into three classes, which differ widely in their mechanism and their surgical prognosis. They are: (1) The bulging disk without a rent in the annulus fibrosus and without detachment of the disk from the bone. Material removed by incision of the disk revealed normal cartilage lamellae. (2) The herniated disk in which traumatized disk lamellae are protruded through a rent of the annulus fibrosus into the spinal cavity where they may encroach on and overextend a posterior root. Herniation of the nucleus pulposus is the exception rather than the rule. (3) The slipped disk in which the trauma involves the cartilaginous epiphyseal plate and which is sometimes accompanied by a chip fracture of the vertebral rim. This frees the disk from its anchorage and permits an eccentric portion of its posterior circumference to slip backward. A posterior root may become hooked up over the protrusion. The sharp bony edges of the fracture may secondarily rupture the slipped disk. An individual constitutional disposition may be responsible for this type of lesion. This condition is visible in the roentgenogram. Trauma appears to be the only cause of herniation or slipping of the disk. The results of incision and dismemberment of a bulging disk are so poor as to suggest that in the 66 per cent of these patients not benefited by operation the bulging disk was not the cause of the sciatic syndrome. The inference is that the bulging disk should not be removed unless it clearly involves a root. The results of simple removal of the herniated disk are so satisfactory that there seems to be no need for further improvement of the operative technic. Operation on the slipped disk gives good to fair results in about one half of the persons operated on. The question is discussed under which conditions thorough removal of the disk may be indicated and when filling of the intervertebral space with bone chips or spinal fusion may be useful.

Wisconsin Medical Journal, Madison

48:207-296 (March) 1949

Leukemia Cutis of Scalp: Report of Case Involving Treatment by Roentgen Rays. E. A. Pohle and J. H. Juhl.—p. 223.
Pediatric Allergy. W. A. McGee.—p. 229.
Bronchiogenic Carcinoma. E. A. Graham.—p. 232.
Some Aspects of Treatment in Emotional Illness. H. M. Murdock.—p. 235.
Treatment of Leukemia. C. H. Watkins.—p. 239.
Surgical Treatment of Amebiasis. M. DeBakey and A. Ochsner.—p. 243.

48:297-388 (April) 1949

*Vitamin E Therapy in Heart Disease. G. L. Baum and W. Stein.—p. 315.
Use of Endocrine Substances in Obstetrics and Gynecology. P. F. Schneider.—p. 318.
Extreme Open-Bite Malocclusion Resulting from Improper Care of Complete Horizontal Fracture of Maxilla and Bilateral Fracture of Mandible. M. N. Federspiel.—p. 325.
Present Status of Vagotomy in Treatment of Peptic Ulcer. P. A. Midellfart.—p. 329.
Medical Care of Nation in Event of Another War. J. C. Sargent.—p. 335.
Eclamptic Toxemia. F. E. Whitacre and C. R. Green.—p. 339.

Vitamin E in Heart Disease.—Baum and Stein studied the effect of alphatocopherol on 22 unselected ambulatory patients with heart disease. The patients were given the drug in the recommended dosage. Only 2 received vitamin E alone; the remainder received other medication deemed necessary. The majority of the 22 patients showed no significant change in body weight, arm to tongue circulation time, vital capacity or blood pressure after oral administration of vitamin E in doses of 200 to 600 mg. daily for periods of nine to one hundred and fifty days. The majority of the 13 patients with the anginal syndrome either showed no improvement or became worse. The improvement noted in a small percentage could not be ascribed definitely to the action of alphatocopherol. No beneficial effect of vitamin E could be obtained in the majority of the 12 patients with hypertension. No improvement could be noted in 14 of 17 instances of cardiac failure. Six of these patients showed increasing congestive failure while receiving alphatocopherol. The reported benefits of administration of vitamin E in the treatment of patients with heart disease could not be substantiated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

61:113-156 (April) 1949

Clinical Reaction of Skin to Mustard Gas Vapor. D. C. Sinclair.—p. 113.
Epithelioma Arising on Lupus Erythematosus. G. E. W. Wolstenholme. —p. 126.
Case of Multiple Benign Angiomata. S. Canter.—p. 130.

61:157-196 (May) 1949

Kaposi's Varicelliform Dermatosis: Virus Pyodermia. T. Anderson. —p. 157.
Case of Kaposi's Varicelliform Eruption (Systemic Herpes Simplex) with Dendritic Ulceration of Cornea. R. Varley and T. Kletz. —p. 166.
Fatal Case of Kaposi's Varicelliform Eruption. J. C. Spry Leverton and F. A. Whitlock.—p. 170.

British Journal of Urology, London

21:1-100 (March) 1949

Etiologic and Therapeutic Experiences Concerning Kidney and Ureteric Stones. J. Hellström.—p. 9.
Bilateral Renal Calculi. J. T. Tait.—p. 17.
Radioscopy in Nephrolithotomy. N. J. Nicholson.—p. 24.
Tubular Calcification in Kidney. L. N. Pyrah.—p. 27.
Urinary Citrate Excretion in Patients with Renal Calculi. N. S. Conway, A. I. L. Maitland and J. B. Rennie.—p. 30.

British Medical Journal, London

1:737-790 (April 30) 1949

Basal-Cell Carcinoma (Rodent Ulcer), with Special Reference to Lesions on Neck, Trunk and Limbs. C. Wakeley and P. Childs.—p. 737.
*Streptomycin Treatment of Tuberculous Bronchopneumonia in Childhood. R. McL. Todd.—p. 741.
Some Practical Problems of Tuberculosis in Childhood. F. M. B. Allen. —p. 747.
*Effect of Endocrines on Fibro-Adenosis. H. J. B. Atkins.—p. 750.
*Curare-Modified Electric Convulsion Therapy in Cases with Physical Disease. P. D. W. Shepherd and D. C. Watt.—p. 752.

Streptomycin in Tuberculous Bronchopneumonia.—Todd reviews observations on 8 children from 5 months to 12 years of age, who were treated with streptomycin for tuberculous bronchopneumonia. This condition may simulate other types of bronchopneumonia, the main clinical differences being the insidious onset, steady progress of symptoms, increasing pallor, flabbiness and weakness, and the progressive character of the abnormal pulmonary signs in tuberculous bronchopneumonia. A history of contact and the isolation of Mycobacterium tuberculosis are important factors in the diagnosis. The streptomycin was given in the form of the hydrochloride. The dosage was 0.02 Gm. per pound of body weight every twenty-four hours, intramuscularly. The drug was dissolved in distilled water and was given in divided doses every six hours. This regimen was continued for twelve to twenty-two weeks. Three patients showed evidence of sensitivity to streptomycin. Two of the 8 patients have died, but even these survived for twelve weeks and nine and one-half months, respectively, after the start of streptomycin therapy. The 5 patients making good progress have survived sixteen, fifteen, ten, eight and four months after cessation of streptomycin therapy. Gain in weight and radiologic improvement in the lung fields are the two most valuable means of assessing progress. In 1 child tuberculous meningitis developed during treatment, and the organism became resistant to streptomycin. Of the 8 patients with proved tuberculous bronchopneumonia treated during the two years preceding the streptomycin trial, 7 died within four weeks after hospitalization.

Effect of Endocrine Substances on Fibroadenosis.—Atkins says that a clinic for investigation and treatment of the painful nodular breast was established at Guy's Hospital in 1937. The author attempted to investigate the effect of endocrine preparations on the disease called fibroadenosis, which is defined as "a painful or nodular condition of the breast not due to new growth, bacterial inflammation or fat necrosis." Thirty-three patients were given estrogen therapy. It was found that the estrogens are harmful if given in doses large enough to be effective, and that the larger the dose the more harmful is the effect. Histologically the fibroblastic reaction, the epitheliosis and the adenosis all tended to increase. Various androgen preparations were given by mouth, by injection, by inunction or by implantation. In a substantial proportion of cases androgen therapy caused temporary improvement in the symptoms of fibroadenosis, but the author believes that the effect is not sufficient to encourage its use in this condition.

Curare-Modified Electric Convulsion Therapy.—Shepherd and Watt report the results obtained in 50 patients whose physical condition rendered them unsuitable for ordinary electric convulsion therapy, but in whom this treatment, modified by curare, was used. This group included 20 patients with skeletal disease (many of whom had old fractures of the spine), 17 patients with cardiovascular disease, 4 with pulmonary tuberculosis and others who were extremely frail or senile. The authors used d-tubocurarine chloride to modify the convulsion. This was mixed with thiopental sodium and atropine, and the whole was given by rapid intravenous injection. Thiopental sodium was given to avoid apprehension and the unpleasant sensation of curarization and to facilitate artificial respiration. Atropine was employed to maintain a clear airway. In the patients susceptible to bone injury the advantages of diminishing the muscular contractions are obvious. Patients with hypertension are given curare because by diminishing the power of the muscular contractions the blood pressure is less affected than during an unmodified fit. It has also been shown in experiments that curare has a direct effect on the smooth muscle of blood vessels and tends therefore to reduce the blood pressure. In patients with congestive heart failure the strain on the circulation, and particularly the heart, is lessened. A suitable oxygen resuscitation apparatus must be available before this treatment is begun.

Edinburgh Medical Journal

56:1-40 (Jan.) 1949

Judgment in Cardiology. R. W. D. Turner.—p. 1.
Treatment of Carcinoma of Rectum with Special Reference to Preservation of Sphincter Mechanism. R. Mailer.—p. 13.

Journal of Laryngology and Otology, London

63:179-250 (April) 1949. **Partial Index**

Otologist and Rehabilitation of the Deaf. R. S. Stevenson.—p. 179.
Changes in Vestibular Reactions After Fenestration-Operation. L. B. W. Jongkees and J. Hulk.—p. 225.
Case of Osteomyelitis of Superior Maxilla Treated with Penicillin. T. M. Banham.—p. 233.
Case of Accessory Sinus Tuberculosis. W. G. R. Hore and W. Kirchenberger.—p. 235.

Lancet, London

1:719-762 (April 30) 1949

Chronic Bronchitis Never a Complete Diagnosis. W. A. Lister.—p. 719.
Observations on a Series of Labors with Special Reference to Physiologic Delivery. G. D. Read.—p. 721.
Curare-Like Action of Tri-(Diethylaminoethoxy)-Benzene Triethyliodide. W. W. Mushin, R. Wien, D. F. J. Mason and G. T. Langston. —p. 726.
*Streptomycin in Non-Tuberculous Infections. P. H. Buxton, Rosemary D. Simon and F. R. Selbie.—p. 729.
Experimental Observations on Renal Blood Flow. D. A. K. Black and M. G. Saunders.—p. 733.
Fatal Air Embolism During Blood Transfusion. G. B. Doyle and Patricia Frodsham.—p. 735.
*Hemochromatosis in Three Families and in a Woman. R. D. Lawrence. —p. 736.

Streptomycin in Nontuberculous Infections.—In January 1947 the Middlesex Hospital was invited to form one of the centers for investigating the value of streptomycin in the treatment of nontuberculous infections. Buxton and associates present the results to August 1948, when 67 patients had been treated. These include 44 with urinary infection, chiefly by Pseudomonas aeruginosa and Escherichia coli; 14 with wound infection, mainly by Staphylococcus albus and 9 with miscellaneous infections. Streptomycin was given only to patients in whom the infecting organism had been proved in vitro to be sensitive to streptomycin but insensitive to penicillin and the sulfonamide drugs. It was found that relatively large doses of streptomycin limited to a four day course in urinary infections due to a susceptible organism are likely to cure about a third of the patients, provided there is no mechanical obstruction to drainage that is producing an inaccessible nidus of infection. Any organisms still present after seventy-two hours showed greatly reduced sensitivity to streptomycin. It was therefore concluded that no advantage was gained by giving streptomycin in adequate dosage for longer than four days in urinary infections, except in the rare event of the residual organism remaining sensitive to the drug. In staphylococcic infections resistant to other forms of chemotherapy the use of streptomycin has been promising. If improvement does not occur within a week of starting streptomycin therapy, further treatment by surgical means to eliminate inaccessible foci of infection and to provide adequate drainage should be considered. Side reactions to streptomycin were encountered in less than a third of the cases, and in only 3 cases, in which there was severe vestibular disturbance, were they of serious significance.

Hemochromatosis.—According to Lawrence, hemochromatosis, also known as bronzed diabetes, is rare. The first of the three families reviewed here had been reported previously. Of 6 males, 2 brothers definitely had the disease and 2 others probably had it. The second family consisted of the parents and 7 sons, of whom 4 were killed in the war (1914-1918). In 2 of the remaining sons bronzed diabetes developed at the ages of 52 and 59, respectively. The third family consisted of the parents and 5 sons, including a pair of identical twins. The father died at the age of 74 with severe diabetes and an enlarged liver, but he had neither splenomegaly nor pigmentation suggesting hemochromatosis. The 3 brothers of the twins seemed normal. The history of the identical twins revealed that at the age of 28 both had what was diagnosed as acholuric familial jaundice and both underwent splenectomy. At 34 one twin had "jaundice," and next year he had hepatitis with enlarged liver. When he was 36, diabetes developed. Nine months later after an attack of vomiting and cessation of insulin therapy the man died in diabetic coma. At necropsy microscopic study of sections disclosed every feature of hemochromatosis. At the age of 36 the other twin, during an attack of tonsillitis, was observed to have an enlarged liver. Later hemochromatosis was diagnosed. He died six months later, and widespread deposits of hemosiderin were found in all his organs. These twins present evidence of a genetic factor in hemochromatosis. The author cites the case of a woman who showed signs of diabetes at the age of 66. She became extremely dark and died three years later. Adrenal insufficiency was suspected from her asthenia and low blood pressure but was disproved by blood chemical tests. At necropsy typical deposits of iron were seen in all the organs examined, substantiating the clinical diagnosis of hemochromatosis. This was the only woman with hemochromatosis whom the author observed, although he had seen 39 men with this disorder. Sheldon's summary of cases listed 16 instances in women to 295 in men.

Medical Journal of Australia, Sydney

1:433-476 (April 2) 1949

Familial Lumbo-Sacral Syringomyelia and Significance of Developmental Errors of the Spinal Cord and Column. M. Jackson.—p. 433.
Post-Mortem Blood Sugar. J. I. Tonge and J. S. Wannan.—p. 439.
Criminal Responsibility in Incipient Psychosis. F. M. G. Prendergast.—p. 447.
Treatment of Neurosyphilis. L. B. Cox.—p. 449.
Recent Advances in Apparatus Used for Electroconvulsant Therapy and Electronarcosis. L. Wilson.—p. 451.
Gold Therapy in Rheumatoid Arthritis. L. J. A. Parr.—p. 453.
Human Toxoplasmosis, with Report of Case. A. R. Edmonds.—p. 456.
Aortitis Caused by Congenital Syphilis. C. Engel.—p. 458.
Some Observations on Recent Advances in Thoracic Surgery. H. D. Sutherland.—p. 459.

Proceedings of Royal Society of Medicine, London

42:115-200 (March) 1949. Partial Index

Anesthesia for Thyroid Surgery. S. Rowbotham.—p. 115.
Dental Sepsis and Chronic Rheumatism. G. D. Kersley.—p. 151.
Fibrositis in Muscles of Mastication. J. W. E. Snawdon.—p. 153.
Review of Treatment of Tuberculous Meningitis with Streptomycin. H. Cairns and Margaret Taylor.—p. 155.
Gross Morbid Anatomy of Central Nervous System of Cases of Tuberculous Meningitis Treated with Streptomycin. P. M. Daniel.—p. 169.
Surgical Anatomy of Ischiorectal Space: President's Address. C. N. Morgan.—p. 189.

42:201-282 (April) 1949. Partial Index

Section of Experimental Medicine and Therapeutics: Place of Experimental Method in Medicine. G. W. Pickering.—p. 229.
Dental Caries in Norwegian Children During and After the Last World War: Preliminary Report. G. Toverud.—p. 249.

Archivos de Pediatria del Uruguay, Montevideo

20:73-118 (Feb.) 1949. Partial Index

*Penicillin Aerosols in Pediatrics. C. A. Bauza.—p. 86.

Penicillin Aerosols in Pediatrics.—According to Bauza inhalation of penicillin aerosol is the treatment of choice for bronchopulmonary infections when these are caused by bacteria sensitive to penicillin. He reports favorable results from administration of nebulized penicillin aerosols in 7 patients, infants or children, with acute lung abscess, bronchiectasis and bronchopneumonia. The inhalation was practiced twice daily in a dose of 50,000 units of penicillin. The penicillin solution used was at a concentration of 25,000 units for 1 cc. of the solution. The treatment was administered for five to nine days. In some cases nebulization of sulfamide aerosols was used alternating with penicillin.

Praxis, Bern

38:339-352 (April 21) 1949

*Treatment of Urogenital Tuberculosis with Streptomycin. J. Cibert.—p. 339.
Vitamin A in Keratosis Follicularis and Similar Dermatoses. F. Oldenberg.—p. 343.

Streptomycin in Urogenital Tuberculosis.—Cibert treated 117 patients with urogenital tuberculosis with streptomycin. The daily dose of the drug was 2 Gm. in the majority of cases and occasionally 1 or 1.5 Gm. The total dose of the drug varied from 15 Gm. to 150 Gm., with an average total dose of 40 Gm. Streptomycin had a pronounced effect on recent and superficial lesions of the urinary mucosa but was not effective in ulcerative caseous lesions of the renal parenchyma. Streptomycin does not change the indications for nephrectomy in tuberculosis. The drug may be effective in ulcerative processes in their initial stage, provided the patient is admitted to a sanatorium and the treatment is continued for a prolonged period. Nephrectomy may become unnecessary as the result of the treatment with the drug in the initial stage of the disease. Streptomycin makes it possible to extend surgical treatment to the urinary lesions of patients with pulmonary tuberculosis. Streptomycin proved to be of value in preoperative treatment and as an adjuvant to surgical treatment by improving early and late results. In cases in which surgical treatment is not feasible or is inadequate, streptomycin should be combined with other measures in order to secure relief and to prolong the life span of the patient.

Schweizerische medizinische Wochenschrift, Basel

79:397-420 (May 7) 1949. Partial Index

Lesion of Brachial Plexus: Paralysis of "Full Pack" in Military Personnel. M. Jéquier.—p. 397.
*Prevention of Fractures During Electroshock Therapy by Means of Mesantoin. P. Plattner.—p. 402.
Sensorium and Sensibility Under Influence of Curare. H. Moser.—p. 408.
Break-Down and Build-Up as Metabolic Problems. H. W. Bansi.—p. 409.
Ultrasonic Waves in Medicine. V. Buchtala.—p. 412.

Mesantoin® to Prevent Fractures During Electroshock Therapy.—Plattner says that in 500 patients, 200 men and 300 women, electroshock therapy was given without medication designed to prevent fractures. This group included only those who had had at least three complete shock treatments. Fractures had been sustained by 18.5 per cent of the men and 7 per cent of the women. These injuries required cessation of the shock treatments in 10 per cent of the men and in 2 per cent of the women. Fractures of the vertebrae are the most frequent. Fractures of the humerus, of the neck of the femur and of the scapula, and dislocations of the shoulder and foot joints, although much less frequent than vetrebral fractures, are generally more serious with regard to the continuation of the shock treatment. The authors used mesantoin,® (3-methyl-5, 5-ethylphenylhydantoin) to prevent fractures. Beginning with one tablet of 0.1 Gm. of mesantoin® twice daily, the dose is gradually increased upward within a week in women up to four to six tablets and in men to six to eight tablets. Doses of from four to eight tablets daily are given throughout the period of treatment, even on the days on which electroshock treatment is not given. No fractures occurred in 130 patients given this drug and subjected to electric shock therapy.

Book Notices

A Primer of Electrocardiography.. By George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine, New Orleans, La., and Travis Winsor, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Southern California Medical School, Los Angeles, Calif. Second edition. Cloth. Price, $4.50. Pp. 245, with 266 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1949.

This is the second edition of an excellent introduction to electrocardiography. It is basically a thorough discussion of the theory upon which the ultimate interpretation of the electrocardiogram is based. The normal and pathologic characteristics of all the usually recognized leads—arm leads, single and multiple precordial leads, unipolar leads and esophageal leads—are amply covered. There is not a large list of photographs of electrocardiograms to be interpreted by the student. Rather, the mechanism responsible for various patterns of the electrocardiogram is amply discussed. With this basic understanding, the clinical application in reading electrocardiograms is based on a solid foundation. The subject matter is clearly presented. This work is highly recommended for the student and the beginner.

Variations in State Public Health Programs as Portrayed by the Annual Combined Report and Plan for the Fiscal Year 1948. By Josephine Campbell, Rubye F. Mullins and Marion Kennedy, Methods Examiners. From the Records and Reports Section, Bureau of State Services, United States Public Health Service, Federal Security Agency. Paper. Pp. 53, with 4 illustrations. Washington, D. C., 1949.

For the physician or other health worker interested in getting an over-all picture of state public health programs, this mimeographed pamphlet is a handy reference manual. Based on the annual combined state reports for 1947 and plans for 1948, it indicates trends for a wide range of activities, including cancer services, mental hygiene, school health services, industrial hygiene, laboratory services and tuberculosis and venereal disease control. The significant fact that most of the states lean heavily on federal aid is emphasized by the decreased operation of maternal and child health services in 1947 and continued cutbacks for 1948. As is pointed out, this is related directly to discontinuance of the Emergency Maternal and Infant Care Program.

Lack of trained personnel in practically all fields is stressed. As might be expected, most states planned extensive additions to mental hygiene staffs. One of the greatest increases accomplished and planned occurred in the field of laboratory services, with rather even distribution among all reporting agencies. Four figures and 37 tables provide an easy means of assimilating the summaries and comparisons. This pamphlet should be in the hands of every physician engaged in public health work.

Office Management for Health Workers. By Frances King and Louis L. Feldman. Cloth. Price, $2.25. Pp. 164, with 12 illustrations. Commonwealth Fund, Division of Publications, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, 1949.

First of its kind in a rapidly growing specialty that is receiving increased attention on all sides, this 164 page volume offers important assistance to workers at practically all levels. The 12 chapters include consideration of the office and staff, card files, correspondence, record forms, reports, surveys, case histories and budgets. The approach is so basic that the volume will be especially valuable to those new to this type of activity. As Stebbins states in his foreword, it should make an invaluable contribution to the effectiveness of a health office. Excellent illustrations are provided to emphasize significant points, and lists of equipment sources and reference books add to the practical assistance provided.

A Treatise on Contemporary Religious Jurisprudence. By I. H. Rubenstein. Cloth. Price $2.50. Pp. 120. The Waldain Press, P.O. Box 97, Chicago 90, 1948.

The interest of physicians in this book will be confined in the main to the second chapter, in which the author discusses the legal aspects, criminal and civil, of faith healing, including Christian science. There are generous references to and quotations from court decisions involving liability for failure on the part of parents to provide medical care for their children because of asserted religious beliefs and the relationship of Christian Science and other so-called forms of faith healing to medical practice acts. Included in the discussion of the civil aspects of the subject are references to the liability of Christian Scientists for malpractice, the effect of belief in faith healing on testamentary capacity, on qualification for jury service and as a ground for divorce. Chapters 1 and 3, respectively, take up the legal aspects of fortune telling and of pacifism as it relates to those who object to military service because of real or pretended religious beliefs. The value of the book lies in its references to pertinent court decisions, not in its literary merit.

Thank God for My Heart Attack. By Charles Yale Harrison. Cloth. Price, $2.50. Pp. 144. Henry Holt & Company, Inc., 257 Fourth Ave., New York 10, 1949.

Physicians may find reason for disagreement with some of Harrison's rather sweeping pronouncements but will be grateful for the basic principle that the patient with a heart attack must let his physician run the show. Harrison's bravado while he was in the clutches of his coronary attack might give some patients wrong ideas.

Additional excellent advice includes reassurance regarding vague chest pains and sensible discussion of the fact that vitamin E is not the "wonder drug" some have termed it for heart ailments. In an extensive discussion of smoking as a factor, data of considerable interest are presented. Also splendid is Harrison's dispassionate yet gentle reminder that as age advances the pace of daily living must be slowed.

Near the end of the volume the author presents a series of questions and answers. There is no clear elucidation of congenital heart disorders as differentiated from inherited tendencies toward development of specific heart diseases. Unfortunately, Harrison dismissed with a wave of the hand the possibility that overweight may be a factor in the development of heart abnormalities. Also unfortunate, in the light of recent scientific reports, is doubt of the value of anticoagulant therapy.

An Index of Treatment. By various writers. Edited by Sir Robert Hutchinson, Bt., M.D., LL.D., Consulting Physician, London Hospital, London, and Reginald Hilton, M.A., M.D., F.R.C.P., Physician to St. Thomas's Hospital, London. Thirteenth edition. Cloth. Price, $17. Pp. 972, with 100 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

Eight years have elapsed between the appearance of the twelfth and the present thirteenth edition of this well known book. It was hoped to publish a new edition three years ago but wartime difficulties of various sorts hindered the project. As in preceding editions, the roster of authors — currently reduced from 78 to 74—includes many of the most distinguished British specialists in practically all fields, and their contributions are of the high order to be expected from such a group. That some of the measures advocated are not in complete accord with American practice is really from our point of view an advantage, for the reader of the book on this side of the Atlantic will be enriched by making acquaintance with procedures—some more radical, others more conservative—that are variants of those he employs. The book is almost unbelievably inclusive.

Das Ekg-ABC: Eine Systematik zur Auswertung von Elektrokardiogrammen. Von Max Waldhecker. Paper. Pp. 114, with 135 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O, 1948.

After a brief general discussion of cardiac anatomy and physiology, the various abnormalities of the different components of the electrocardiogram are listed and their meaning is discussed. Drawings are presented instead of actual records. The following examples are quoted in order to illustrate the erroneous statements made by the author: Disturbances of impulse conduction like sinoauricular block, auriculoventricular block and bundle branch block are listed as disturbances of impulse formation. Nonphasic sinus arrhythmia is stated to indicate myocardial damage. An instance of sinoauricular block where one of four sinus impulses is not followed by an auricular response is called 4:1 sinoauricular block. Passive nodal rhythm is interpreted as evidence of complete sinoauricular block. The common type of intraventricular block is called right bundle branch block and the uncommon type left bundle branch block, and later it is stated, "according to recent investigations the intraventricular block of the uncommon type may also be right bundle branch block and only the Wilson block may be left bundle branch block."

The booklet fails to reflect the progress of electrocardiography made during the past fifteen years. This includes the important work on chest leads in the German literature published by F. Groedel and by M. Holzmann before World War II. It is revealing that G. Thieme, one of the outstanding publishers of medical literature at the time when German medical writing was at its best, today accepts such a totally inadequate book for publication.

Die geburtshilflichen Operationen: Ihre Ausführung und Anwendung: Ein Lehrbuch für Studierende und Gebrauchsbuch für Ärzte. Von Prof. Dr. med. Heinrich Martius, Direktor der Universitäts-Frauenklinik Göttingen. Sixth edition. Boards. Price, 15.60 marks. Pp. 287, with 281 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O, 1948.

The appearance of six editions within fourteen years is sufficient proof that this book is popular. The author takes up the structure and forms of the birth canal and the baby, the mechanism of normal and abnormal labor, forceps operations, breech extraction, version, embryotomy, treatment of lacerations, operations for enlarging the birth canal, such as espisiotomy, cervical incisions, metreurysis, symphysiotomy, abdominal cesarean section, delivery of twins, treatment of prolapse of the cord, and arms, conduct of cases of placenta praevia, manual removal of the placenta, treatment of abortion and uterine tamponade, and operations to interrupt pregnancy and produce sterilization. Most of the 281 illustrations appear in the author's two volume "Lehrbuch der Geburtshilfe," but they are excellent and highly instructive. The illustration of the breech hook should be omitted because it is dangerous. Likewise, the drawing of the Credé expression of the placenta should be deleted for the same reason. Twenty pages and 27 illustrations are devoted to destructive operations, which is a disproportionately large amount of space and illustrations. In spite of these minor criticisms, the book is decidedly worth while because it was written by one of the leading obstetricians in Germany who demonstrates his extensive experience throughout the book. It is highly recommended for those who can read German.

Management of Common Gastro-Intestinal Diseases. Edited by Thomas A. Johnson. The American Practitioner Series. Fabrikoid. Price, $7. Pp. 280, with 16 illustrations. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1948.

The editor has selected capable gastroenterologists to write the chapters assigned to them. Unfortunately, some of the chapters, particularly that regarding the therapy of peptic ulcer, include material not substantiated by long-continued clinical experience.

One questions the validity of making a diagnosis of pancreatic diseases by means of determination of serum lipase and serum amylase only. Too much emphasis is apparently placed on the blood levels of serum lipase and amylase in the diagnosis of diseases of the pancreas.

Disease of the extrahepatic biliary passages is one of the most common digestive complaints, but is noteworthy by absence of consideration in this book. This statement is made in spite of the fact that the editor states in his preface that no attempt was made to cover the entire gastrointestinal field.

As a whole, the book is well written, in simple, understandable language, and is to be highly recommended to both students and practitioners.

Die Tuberkulose des Kindes: Ein Lehrbuch aus der Kinderheilstätte Wangen im Allgäu. Von Dr. med. habil. Heinrich Brüger, Dr. med. habil. Reiner W. Müller und Dr. Maria Birkenfeld. Boards. Pp. 340, with 209 illustrations, Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O, 1948.

This book of 340 pages is devoted entirely to tuberculosis among children. In the introduction, attention is called to the high incidence of tuberculosis in Europe. The author does not regard congenital tuberculosis as an important problem. Under the heading of diagnostic aids, considerable importance is placed on the tuberculin test and the demonstration of tubercle bacilli. The discussion of primary tuberculosis includes the primary complex, with considerable emphasis on involvement of the bronchial lymph nodes. It is pointed out that evidence of disease seen in the parenchyma from the roentgen shadow it casts may be due to parenchymal inflammations or to atelectasis. The danger of atelectasis resulting in contraction of the involved part or bronchiectasis is emphasized. A large number of roentgenograms illustrate various stages in the evolution of primary tuberculosis and its complications.

Acute, fatal forms of tuberculosis, dependent on the primary type of the disease for their development, such as meningitis and miliary tuberculosis, are fully discussed. Once primary tuberculosis is established, all the other possibilities are presented, including the reinfection chronic forms of the disease. Under chemotherapy, various preparations are mentioned, but the sulfones and streptomycin are not discussed. Tuberculin therapy is given some consideration. All of the usual forms of treatment, such as collapse therapy, are presented.

About 20 pages are devoted to tuberculosis of the cervical and abdominal regions, with particular reference to involvement of the lymph nodes. This section is well illustrated and contains important points in diagnosis and treatment. The section on tuberculosis of the bones and joints consists of 86 pages and is profusely illustrated. The last chapter is limited to tuberculosis of the skin. This volume contains 209 illustrations and has a good index.

Die Lungentuberkulose: Eine Einführung. Von Dr. habil. Wilhelm Roloff, Chefarzt der Heilstätte Donaustauf bei Regensburg der LVA. Niederbayern-Oberpfalz. Cloth. Price, 9.60 marks. Pp. 138, with 31 illustrations. Springer-Verlag OHG, Jebensstrasse 1, Berlin-Charlottenburg 2, 1948.

This volume of only 138 pages contains a great deal of valuable information. A tuberculosis mortality graph for Prussia from 1876 to 1940 shows a decrease in the mortality rate from more than 300 per 100,000 in 1876 to less than 150 per 100,000 in 1914. There was then a sharp rise in the mortality rate to more than 250 per 100,000 in 1919. By 1924 the rate was again down to the 1914 level, and it continued to decrease to within the 50's per 100,000. Thus, within ten years after World War I began the mortality rate had reached its prewar level, and it continued downward at the same rate as prior to the war until 1940. It was well known that there was a rise in the mortality rate during World War II. However, the death rate now is apparently decreasing in a manner similar to that after World War I. The author has also shown graphically how in 1936 the mortality rate in Germany reached its height in the age group of approximately 65 years. After the age of about 30 years, rates among men were definitely higher than among women. At the age of 65 years the rate was almost 120 per 100,000 for men and less than 90 for women. This sex difference in mortality rate had continued through 1947.

Pulmonary tuberculosis is presented in considerable detail with reference to diagnosis and treatment. Chemotherapy, including antibiotic therapy, collapse therapy and other usual procedures are discussed at some length. The book contains 31 illustrations, mostly roentgenograms, six tables, a reference list and a good index.

Fetal and Neonatal Death: A Survey of the Incidence, Etiology, and Anatomic Manifestations of the Conditions Producing Death of the Fetus in Utero and the Infant in the Early Days of Life. By Edith L. Potter, M.D., Ph.D., Associate Professor in the Department of Obstetrics and Gynecology, the University of Chicago, and Fred L. Adair, M.D. Second edition. Cloth. Price, $3.75. Pp. 173, with 38 illustrations. University of Chicago Press, 58th St. & Ellis Ave., Chicago 37, 1949.

This volume is a revision of a book written and published originally in 1939. Dr. Potter and Dr. Adair have entered a field neglected by most authors and not at all well covered in medical literature. They have in general attempted to determine the cause of death in a period immediately after birth and preceding birth. The revision is more adequate than the original edition and contains the result of continued investigation and studies in this field of pathology. Especially excellent is the section concerned with the Rh factor and the influence which this factor has on death of the fetus and the baby in the neonatal period.

The authors have collected information relative to the effect of maternal German measles on the fetus. The book is splendidly written and especially valuable to all students of pathology, pediatrics, obstetrics and public health. It can be highly recommended to all physicians as an excellent contribution to a field not too well known or understood.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

AIR-FILTERING SYSTEMS FOR HAY FEVER

To the Editor.—One of my patients has hay fever and has consulted me as to the advisability of installing a window air-conditioning unit in her bedroom. I should appreciate your opinion about the extent of relief the patient may expect and whether there is any particular unit you would recommend. David Bornstein, M.D., Paterson, N. J.

ANSWER.—Several kinds of filtering systems are available. The ideal system is placed in the air intake which serves the entire house. The most commonly used apparatus is the filter and fan combination placed in a window of the patient's bedroom (Arnett Air Filter, Arnett Air Filter Co., Chicago; Airgaard Filter, American Air Filter Co., Chicago). Some also provide cooling (Carrier Room Ventilator, Carrier Corp., Syracuse, N. Y.). A special apparatus (Ratheon Precipitator, Ratheon Corp., Chicago) which makes use of the principle of attraction of air particles to plates having a high electrostatic charge in addition to the filtering mechanism increases the effectiveness of particle removal. Too much is expected from filters. In the case of pollen and mold spores most of the exposure occurs during the daylight hours. The number of pollen or mold spores to which the patient is exposed during the night in his bedroom without a filter is about 5 to 20 per cent of that to which he could be exposed during the twenty-four hour period under usual conditions. One cannot expect too much benefit from a measure directed to a fraction of the sufferer's allergen exposure. If the patient is willing to stay in the prepared room the greater part of the twenty-four hours, the results can be, of course, much better.

SENSITIVITY TO A THINNER PENETRATOR

To the Editor:—An artist now teaching textile painting is experiencing sensitivity to Prang's textile colors penetrator thinner made by American Crayon Co. of New York. Can you tell me what the probable offending agent is or suggest a substitute thinner of a less allergic nature? M.D., Montana.

ANSWER.—This query fails to inform one as to the nature and locus of the sensitivity. It is assumed that this condition is manifested by dermatitis; otherwise this reply is less valid. Prang's thinner penetrator is believed to approximate or simulate the following mixture: 35 per cent turpentine; 60 per cent NJ150, an aromatic petroleum solvent; 5 per cent high flash VM & P naphtha. Prang's thinner penetrator, purchased in open market, proved on casual skin patch testing to be a highly active primary irritant. Within one-half hour of contact, pronounced skin inflammation with discomfort appeared. Primary irritation is believed to constitute the chief action, but the possibility of allergic sensitivity is not denied. All of the possible constituents mentioned are known primary skin irritants. The selection of a wholly harmless substitute is difficult, since the technical requirement of a combined thinner penetrator calls for substances at least akin to those mentioned. However, it might prove expedient to employ turpentine alone, as this substance is perhaps the least active of the irritants involved. Further, it might prove practical to utilize a higher boiling point petroleum fraction, such as Stoddard's solvent, but equally good technical results are not assured. Pine oil as a penetrator may prove somewhat less irritating. For thinner alone it may prove possible to rely on a combination of known lesser irritants, such as one or more higher alcohols such as amyl alcohol, one or more esters such as ethyl acetate, and/or one or more ketones such as methyl ethyl ketone and possibly an aromatic such as toluene, although toluene exposure when high and sustained may induce systemic damage. Some protection may be gained by the application to the skin of nongreasy skin barriers, such as may be provided by the Milburn Company, Detroit, among others. It becomes obvious that extensive skin contact with any thinner penetrator of the type under discussion, in school instruction or elsewhere, is to be avoided. If contact is inevitable and substantial, the use of this item is attended by some risk of dermatitis.

INFANTILE CEREBRAL PALSY

To the Editor:—A male child, 17 months of age, has the following history: The mother's labor started at full term and was prolonged by five or six hours because of anterior colporrhaphy done ten months before onset of this pregnancy. The head was delivered with low forceps without any difficulty or traction. The baby seemed to develop normally but was rather listless. During the first month or two he had only one bowel movement per week. The baby was breast fed. At about 6 months he was unable to hold his head up well; it would fall forward toward his chest. A croupy cold developed several times with extreme croupy sound when the baby inhaled. These were treated with inhalations and phenobarbital atropine tablets. His muscles seemed atonic and flabby. When about 8 months old he was not able to sit up alone, but would fall forward. He has a ruddy complexion and fine but not abundant hair. When 1 year old he learned to clap hands and stood on his feet while holding onto something, but made no effort to crawl. At the age of 8 months, thyroid, whole gland substance, 2 to 4 grains per day, was begun, which he has received until now. He looks fine and is happy, yet he is much retarded for a baby of that age. Now at 17 months of age he does not make any effort to crawl, except backward. He pushes his walk toddle cart backward, but it has not taught him to walk. His knees seem wobbly. His teething has been irregular; he now has 10 teeth. The lower incisors are rather serrated, and the upper ones are chisel like. His features look normal. His anterior fontanel has closed to a great extent in the last three months, but it admits the tip of a finger. His bowel actions are now normal, even overactive at times, which I attribute to the thyroid administration. He has been fed S M A® (milk preparation) since 8 months of age and is rather fat, but not overly so. He has not talked yet, but tries to say "kitty" when he sees the cat. The other 4 children in the family are normal. This baby has had vitamin B tablets as well as radio-malt (a British malt extract preparation containing vitamins A, B_1, B_2 and D). The penis is small but normal in appearance. Both testicles are in the scrotum. He seldom cries. When the dessert is brought in he gets excited and refuses any more vegetables. He likes milk. When he hears singing, he sings too. Please suggest diagnosis, prognosis and treatment. O. Rouhe, M.D., Kamina, Belgian Congo.

ANSWER.—Apparently this baby is suffering from infantile cerebral palsy. Probably he suffered meningeal or cerebral hemorrhage in the course of a somewhat prolonged labor, and to some degree to a vaginal wall obstruction, which is mentioned in the inquiry. Sometimes cerebral palsy is caused by a congenital malformation of cerebral structures, although this condition is relatively rare compared with hemorrhage at birth. The ultimate outcome in any single case is always doubtful. Some patients progress physically and mentally more than others, depending on the amount of cerebral damage sustained. Obviously, the amount of brain injury is difficult to determine.

From the clinical description surgical intervention does not seem indicated. No contractures or skeletal deformities are referred to in the case report. Braces would be without value, as they would only add extra weight to the already overburdened trunk and extremities. Prolonged bathing, permitting the child to splash and tumble, affords opportunity for muscular movements in the water, an excellent form of exercise. Avoid overfatigue, but encourage the child to exercise on the bed or floor by using his muscles freely. Allow the child to stand by the side of a table or chair, and assist him in making steps as if he were attempting to walk. Give him passive exercise by moving his back and extremities, supplemented with mild massage.

Nothing is to be gained by formal mental instruction at this time, except that which occurs in casual conversation and play with toys and picture books. Improvement at best is slow, though many of these patients make unexpected progress in time. The rearing of these children requires the greatest patience and forebearance on the part of parents and the family.

BCG VACCINATION

To the Editor:—My son, 22 years of age, has a negative reaction to tuberculin. He will soon be assigned to the Trudeau Foundation for the study of tuberculosis. Is it advisable to give him BCG inoculations preliminary to this assignment? M.D., New York.

ANSWER.—Although BCG has been used for over twenty-five years, complete accord regarding its value in all situations is not noted. Levine (*Am. Rev. Tuberc.* **58**:581-582 [Nov.] 1948) contends that a rigid selection and control of the cases fails to show much advantage in vaccinated over unvaccinated persons. Myers (*Am. Rev. Tuberc.* **57**:107-109 [Jan.] 1948) believes that with good public health work BCG is not only unnecessary but is a detriment in producing tuberculin-positive reactions when tuberculin is used in case finding. In sparsely infected regions, there seems to be much merit in Myers' contentions. A large number of experienced investigators, however, have shown that tuberculin-negative persons vaccinated with BCG are less prone to have tuberculosis than unvaccinated persons. The trend of opinion in this country now seems to be in favor of vaccination, especially where public health facilities are poor and in persons who are exposed to frequent and heavy infection, such as nurses, attendants, technicians, medical students and doctors in tuberculosis hospitals.

Since the person in question is going to a place of gross exposure to tubercle bacilli, vaccination with BCG is recommended.

CANKER SORES AND SMALLPOX VACCINATIONS

To the Editor:—I have been treating with smallpox vaccinations a 30 year old woman, who has multiple, severe, recurring canker sores of the mouth. There was a typical "take" to the first vaccination, and immune reaction *followed each vaccination until ten had been given (at weekly intervals).* Improvement occurred. Although a few canker sores formed, they were shallow and caused little pain. Gradually, however, the canker sores returned, and a second course was given. Again, the first vaccination resulted in a typical "take" and improvement followed. When the canker sores again became more severe a third series was started, and for the third time in a twelve month period a "take" resulted on the first vaccination of the series. I should like to ask the following questions: (1) Why should there be an apparent loss of immunity to the smallpox vaccination in such a short period of time? (2) Is there any way in which the immunity may be made more permanent? (3) Is there any other treatment you would recommend?

H. P. Van Cleve, M.D., Dodge Center, Minn.

Answer.—The case described has been given an excellent trial of vaccination therapy and can be used as an example of the etiologic aspects and treatment frequently associated with this condition. The newest knowledge of herpetic ulceration of the mouth indicates that it is caused by the virus that causes herpes simplex. Several conditions which have been mentioned as causes in the past probably act as conditioning factors to permit the virus to produce the lesions, e. g., vitamin B complex deficiency, hyperthyroidism, fevers, leukemias, menstruation, mild trauma and constitutional peculiarities. A typical feature of herpetic infection is that it does not produce an immunity of long standing. In the present instance the patient apparently did not have lasting immunity to the herpes virus as a result of cowpox vaccinations.

Studies by McNair Scott and associates in Philadelphia have shown that persons who have recurrent herpes exhibit a low antibody titer to the herpes simplex virus. Members of a family who have herpes have a low antibody titer. Patients with recurrent herpetic stomatitis often have difficulty in obtaining a "take" from smallpox vaccine (communication from Dr. Lester Burket, Philadelphia).

There would seem to be no way by which the immune period could be prolonged. One might try lengthening the time between vaccinations, but this at best is only as a matter of convenience. The patient should be studied thoroughly, and all adjunct methods used if they seem logical.

Allergy should be considered. Oral hygiene should be practiced. An emotional instability should be considered and, if present, treated. An antihistaminic drug could be tried. The newly developed antibiotics, particularly aureomycin, which have been effective against some viruses, might be kept in mind, although no reports of their use in conditions like the one described have been made.

ROCKY MOUNTAIN SPOTTED FEVER

To the Editor:—A man aged 30 discovered a flat tick loosely attached to his body on awakening. The tick could easily be removed. In such a case, should 2 cc. of Rocky Mountain spotted fever vaccine be given immediately and 2 cc. one week later, or should 1 cc. be given three times at weekly intervals, or should no medication be given? The patient was asymptomatic, and the tick was not attached longer than fourteen hours.

M.D., Colorado.

Answer.—Rocky Mountain spotted fever vaccine is probably of little value when administered after an infected tick bite. Probably ten days or more are required for immunity of this type to develop. If the patient in this case is likely to be exposed repeatedly, he may be immunized in the routine manner to protect him against possible infection from subsequent tick bites. There is relatively little difference between the two methods of administration indicated in the question, except that the use of 1 cc. for three injections is less likely to cause annoying reactions.

The efficacy of treatment of Rocky Mountain spotted fever has been so much improved by the discovery of the antibiotics chloramphenicol and aureomycin that the occurrence of a tick bite at rare intervals need no longer be regarded as seriously as once was the case, although it is still advisable to use all reasonable precautions against ticks in order to avoid bites.

APHTHOUS STOMATITIS

To the Editor:—A 21 year old married woman has a normal history, except for one attack of pyelitis, and aphthous stomatitis since early childhood. While she is never completely free, during menstruation her mouth shows numerous lesions. She has a temperature up to 102 F. and is unable to eat. She has been in hospitals several times and has received the following medication: penicillin, orally and intramuscularly; sulfathiazole; bismuth by injection; large doses of vitamin B complex; ascorbic acid, and numerous mouth washes, without any change in the clinical picture. At present she receives 1 tablet of cebefortis® (thiamine hydrochloride 5 mg., riboflavine 5 mg., pyridoxine 1.5 mg., calcium pentothenate 25 mg., nicotinamide 50 mg. and ascorbic acid 150 mg.) daily. She uses methylrosaniline chloride locally and 1 ampule of bismuth arsphenamine sulfonate (bismarsen®) weekly. That regimen seems to shorten the duration of the acute symptoms but has not cured her condition.

Ernest Burian, M.D., Sidney, N. Y.

Answer.—The cause of aphthous and herpetic stomatitis is the virus of herpes simplex, to which some persons may have little or no continued immunity. The susceptibility may be modified by secondary conditions. The lesions are recurrent, and they resist therapy with ordinary methods, such as have been used in this case. The most effective method of prevention is recurrent vaccination with smallpox vaccine. A series of eight or ten vaccinations are given, at intervals of a week or ten days, starting when the lesions are absent, if possible, and continuing regardless of "takes." The local use of estrogenic ointment has also been suggested. (See The Journal, July 10, 1948, page 1004.)

DRYNESS OF SKIN

To the Editor:—I have under my care a woman age 40, bipara, gravida II, who has been complaining of dryness of skin, lips and scalp for the past two years. Results of complete physical examination are negative. The blood, urine and radiographic observations are within normal limits. The only positive observations are retroversion and a small fibroid of the uterus. She was seen by a dermatologist, who expressed no opinion but advised the use of vitamin A (25,000 units) daily. There has been no change in her condition despite vitamin A therapy for over a year and the use of cold cream massages.

M.D., New York.

Answer.—It might be well in this case to increase the dosage of vitamin A to 100,000 units daily, and to apply to the skin an ointment that is softening and absorbed to some extent—one made with wool fat or aquaphor® (an oxycholesterol-petrolatum ointment base). Water for bathing should be softened by the addition of a starch product, and a soapless detergent should be used instead of soap. If the basal metabolic rate is low, therapy with thyroid substance is indicated, and perhaps estrogenic substances if there is reason to suspect early onset of menopause. It is assumed, of course, that possible irritants, such as from cosmetics or products used in housework, have been eliminated as causative factors in this case and that thorough studies have been made to rule out systemic factors, such as diabetes.

PROCAINE ADMINISTERED INTRAVENOUSLY

To the Editor:—There is a question in the Queries and Minor Notes of February 26 (page 616) relating to use of 1 per cent procaine hydrochloride intravenously in cardiac arrhythmias. The reply gives a misleading sense of security. It should be emphasized that 1 per cent procaine hydrochloride given intravenously is extremely dangerous because of effects on the central nervous system; it causes convulsions and respiratory arrest.

The cases cited in the reply are those of ventricular arrhythmias arising in patients anesthetized with cyclopropane. In these circumstances procaine hydrochloride is indicated because of the extreme gravity of the prognosis and because deep general anesthesia will prevent the convulsive state that this dose of the drug would otherwise precipitate. In addition, facilities for continuous oxygen administration and artificial respiration are available in operating rooms.

Further evidence exists to contradict the reply given, as procaine hydrochloride and its products of active hydrolysis have been shown to act primarily on ventricular premature contractions and ectopic ventricular rhythms. It usually is ineffective in tachycardias of supraventricular origin, as in paroxysmal auricular tachycardia or paroxysmal auricular fibrillation. *Thus, even if a patient were subjected to profound anesthesia* to prevent the central nervous system irritation, intravenous administration of procaine hydrochloride rarely would be the method of choice.

Dr. Brody and his co-workers at the Goldwater Memorial Hospital, New York, have done extensive pioneer work on the less toxic hydrolysis products of procaine—diethylaminoethanol—and clinical trials of this drug are being carried out at Montefiore Hospital, New York, which work confirms the observation that procaine and its hydrolysis products act primarily on ventricular rather than supraventricular arrhythmias. It should be emphasized that intravenous use of 1 per cent procaine hydrochloride is not a safe routine for use in cardiac arrhythmias in unanesthetized patients.

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The Journal of the
American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 141, No. 6 CHICAGO, ILLINOIS OCTOBER 8, 1949

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ANESTHESIA, PAST AND PRESENT

Chairman's Address

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In using the subject "Anesthesia Past and Present" it is not my intention to give unnecessarily a history of anesthesia, but many of the highlights and milestones passed along the way must be presented in order to bring out the progress made in this specialty over the years. This progress came slowly at first.

ANESTHETIC AGENTS AND EQUIPMENT

Nitrous Oxide.—Nitrous oxide was discovered by Priestley in 1772, and Davy in 1800 suggested that since nitrous oxide "appears capable of destroying physical pain, it may probably be used with advantage during surgical operations." However, it was not until Dr. Colton was induced in 1844 to give Horace Wells nitrous oxide for the extraction of one of his teeth that the agent was first used. Its early use was almost entirely limited to dentistry. In 1868 Edmund Andrews added oxygen to nitrous oxide, but this innovation was not readily accepted, as everybody thought that air had to be excluded in a nitrous oxide anesthesia and that it was foolish to add oxygen. In 1872 the Johnston Brothers' Dental Depot in New York compressed nitrous oxide to a liquid and put it in tanks. Not until 1898 was the first machine brought out for proportioning the gases. It consisted of a double hanger yoke without valves or gages. I have seen those machines and have used one a few times. Then in rapid succession in the next ten to fifteen years were brought out the White, the Teter, the Clark, the McKesson, the Heidbrink, the Connell, the Ohio Monovalve, the Gwathmey and the von Foregger machines. Then Boothby and Cotton introduced reducing valves. From this stage in 1912 until the present these machines along with reducing valves, gages, sight feeds and flowmeters have been developed to the accurate, dependable and mechanically perfect machines now in use.

It took nearly fifty years from the time when Davy first suggested the use of nitrous oxide until it was first used by Wells and another fifty years before there was a machine which would proportion the gases. Fifteen to twenty years more were required to perfect the valves, gages and feeds. Yet many hundreds of thousands of persons were anesthetized during this time. I have had a Teter, a Clark, the early Heidbrink and the Ohio Monovalve before getting the more modern machines.

Ether.—Ether was discovered by Lullius in 1200. It was called sweet vitriol. Paracelsus discovered its soporific qualities in 1540 and recommended its use in painful conditions, and Frobenius in 1792 gave it the name of ether. It was used from then on in the treatment of painful respiratory conditions. For many years before its first trial as an anesthetic in 1842, it was used in various parts of the country for its exhilarating effect; it was while a young fellow was on an ether jag and injured himself that Dr. Long discovered its anesthetic effect. He used it on some 8 patients, but did not report his experience with the drug until 1848. When Dr. Morton gave his first demonstration for Dr. Bigelow in 1846, it was at the suggestion of Dr. Jackson, a chemist. Dr. Morton attempted to keep the nature of ether a secret and even to patent it under the name of letheon; he had to be told by Drs. George Hayward and J. C. Warren that he could give no more anesthetics for them until he told all the physicians what he was using. Morton agreed to this, and on April 7, 1847, he gave his second demonstration for Dr. Hayward.

APPARATUS AND METHODS

Early apparatus for the administration of ether were all similar in pattern; that is, air was passed over or through ether volume in closed containers of various sorts. The first attempt to get away from the pungent odor and the suffocation that went along with the concentrated ether vapor was made by combining ether with other less pungent agents. Various combinations of alcohol, chloroform, ethyl bromide and ethyl chloride with ether were used. One which was popular for some time was the A. C. E. mixture (one part alcohol, two parts chloroform and three parts ether). As with nitrous oxide, it was believed that air should be excluded, only enough being admitted to prevent asphyxia. Later various types of masks came into use. One of the first of these was the Allis inhaler; as late as 1901 Heineck in his book described the use of this inhaler, saying that it was a mistake to suppose that air must be excluded. He said the ether should be given so that air is present in the proportion of about 5 per cent while the patient is struggling. He also administered ethyl bromide by pouring the full required dose into the inhaler. It is interesting to note that ethyl bromide was used as an inhalation agent just as ethyl chloride was used.

Later a more gradual method was adopted in which the ether or chloroform was dropped on the mask. The drop method was first used for chloroform and later adopted for ether. Even after the drop method was in general use, it was more or less customary in ether anesthesia to wrap a wet towel about the mask. Then the pendulum swung the other way, and physicians were no longer afraid to mix air freely with ether. The open mask became the popular method, later

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Read before the Section on Anesthesiology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

semiclosed mask with the exclusion of air and the much more gradual increase in the concentration of the agent.

I remember the first time I witnessed the giving of an anesthetic, in 1908. It was not expertly given; there was much struggling, coughing and strangling on the part of the patient, and I thought what a horrible experience it must be to take an anesthetic. However, during my junior and senior years in medical school in 1911-1912, when I attended the surgical clinics, I was to witness for the first time anesthesia induced with nitrous oxide, and nitrous oxide followed by ether. I then found that I was more interested in anesthesia than in surgery. I plied the anesthetist with so many questions that he gave me all the literature and pamphlets that he had and I read them and reread. In the latter part of the senior year each student was supposed to give anesthetics under supervision to 3 patients. I did fairly well with two ether anesthesias and asked if I might try a nitrous oxde; one day I was allowed to sit in on an operation after anesthesia had been induced with nitrous oxide. I did not sit long, as I was overly cautious: the instructor had to take over and get the patient asleep again. As an intern I had no trouble trading work with the other interns so that I gave the anesthetics. To this time knowledge of anesthesia was obtained by word of mouth, in recounting experiences, and by trial and error. Each man was attempting to perfect a technic of administration, and at this stage anesthesia was an art. Without much literature on the subject, each man was left to work out his own technic, and a few became exceedingly efficient.

DEVELOPMENT OF LITERATURE ON ANESTHESIA

The first book on anesthesia (by John Snow) was published in 1858. Hewitt's handbook in 1888, his edition of "Anesthetics" in 1893 and Heineck's book in 1901 were practically the extent of the literature. Even Snow's volume in 1858 showed a marvelous grasp of fundamentals on ether and chloroform, and Hewitt too emphasized many things to do and not to do; Heineck drew many basic conclusions. These men could not always interpret what they saw, but they put down all their observations and gave some definite interpretations. For instance, Hewitt said that a large proportion of deaths due to chloroform anesthesia occurred in minor operative procedures, and Sir B. W. Richardson (quoted in Heineck's book) said that the element of fear can easily lead to heart failure, the fatal result taking place within a few minutes after the commencement of the inhalation. Heineck therefore stated that in no circumstances should incomplete anesthesia be deemed sufficient for even the most trivial operation, as pain may inhibit the action of the heart and lead to syncope and death. This is good advice even today.

Heineck also made the observation that ether increased the bronchial secretions and that the stagnation of these in the bronchi can excite pathologic conditions in the lungs. To this time there was little premedication used, as nearly all physicians were afraid to mask the signs of anesthesia, particularly the action of the drugs on respiration and on the pupil.

Heineck also told of Hare's experiments to determine the relative value of the Sylvester and Marshall Hall methods of artificial respiration, in which curare was used to prevent voluntary breathing. I believe this is the first reference that I have seen to the use of curare in this manner.

In 1914 Dr. Gwathmey's book was the first to treat effectively of the physiology of anesthesia. In 1915 and in 1916 Dr. McMechan put out a yearbook on anesthesia and analgesia. He was instrumental in having printed, beginning in 1916, a quarterly supplement on anesthesia in the *American Journal of Surgery;* this was continued for about ten years. Then came Poe's book and Guedel's "Signs of Anesthesia" in 1920 and Labat's "Regional Anesthesia" in 1922. These were all milestones in the progress of anesthesiology.

ORGANIZATION OF ANESTHESIA AS A SPECIALTY

Although the Long Island Society of Anesthetists was formed in 1905 in Brooklyn and the American Association of Anesthetists was organized in 1912 in Minneapolis with Dr. Gwathmey as the first president, the real credit for the organization of anesthesia as a specialty belongs to Frank McMechan. He organized the Interstate Society (Ohio and Kentucky) in 1915. Hamilton Long of Louisville, Ky., and E. I. McKesson of Toledo, Ohio, were among the first members. McMechan organized the National Anesthesia Research Society at Cleveland in 1919, and this name was later changed to the International Anesthesia Research Society. In succession he organized the Eastern, Southern, Mid Western, Pacific States and Canadian societies. The first congress of Anesthetists was held in 1921, and the following year *Current Researches in Anesthesia and Analgesia* began publication. This was the first medical journal to be devoted entirely to anesthesia. In the early twenties he came to Colorado and assisted in setting up a Colorado State Society of Anesthetists, in affiliation with the Mid Western Society.

METHODS OF ADMINISTRATION OF ANESTHESIA

Local, Regional and Spinal Anesthesia.—The next notable change was the popularization of regional anesthesia by the publication of Labat's book in 1922. The whole field of local, regional and spinal as well as intravenous anesthesia was all dependent on the discovery in 1853 of the hypodermic needle by Alexander Wood and the syringe by Charles G. Pravez. Koller first used cocaine as a local anesthetic in 1884. The following year William S. Halsted used it as a nerve block and J. Leonard Corning used it in the spine, evidently as a peridural agent. He later used it as a nerve block, and in 1894 injected it into the medullary canal as a spinal anesthetic. August Bier in 1898 and Rudolph Matas in 1899 also used it as a spinal anesthetic. In 1903 stovaine® (benzoyldimethylaminomethylpropanol hydrochloride) was introduced by Fourneau, and in 1904 procaine (novocain®) was brought out by Alfred Einhorn. For several years stovaine® was the more popular agent, even though procaine was less toxic. I first observed spinal anesthesia induced with stovaine® in 1912. As late as 1918 Tuffier was still using cocaine for spinal anesthesia. Danis was performing transsacral blocks in 1913. Regional blocks and spinal anesthesia were never popular and were seldom attempted; little was written concerning them prior to World War I, which gave added impetus to regional and spinal work. It remained for Labat's demonstrations and the publication of his book on regional anesthesia to popularize these methods.

Intratracheal Anesthesia.—William Macewen in 1878 was the first to introduce anesthesia through a tube inserted into the trachea, and in 1895 Kirstein first introduced a tube into the trachea by a direct vision laryngoscope. But intratracheal anesthesia was not used to any extent until 1909, when Elsberg used it. It did not become popular until 1920, when Magill's work brought it to the fore. I gave my first intratracheal anesthesia in 1917. An amusing thing happened to me in 1919. I administered an ether intratracheal anesthesia of four hours' duration to a patient undergoing excision of a carcinoma of the lip and a block dissection of the lymph nodes of the neck. The patient sued me for giving him an anesthetic without his consent or knowledge. By that time in my career I could fairly consistently induce effective anesthesia in a patient, but I never thought that I could administer ether without the patient's knowledge that he was getting an anesthetic.

Intravenous Anesthesia. — Intravenous anesthesia was introduced by Oré of France in 1872. He gave about fifty anesthesias intravenously using chloral hydrate. Adoption of the intravenous method of inducing anesthesia was slow. It was not until 1901 that Fedorow used hedonal, but the agent was given in such large dilution that edema of the dependent parts was the usual result, so this compound was combined with chloroform and ether. Burkhardt in 1909 and 1910 also administered chloroform and ether intravenously. Then isopropyl alcohol was tried. In 1913 Noel and Souttar used paraldehyde. This was administered extensively to the wild alcoholic addicts and the insane. In 1924 the barbituric acid derivatives were being used in France and Germany. Diallylbarbituric acid (dial®) was the first to be given a trial by Bogendörfer, then somnifene® (barbital and diallylbarbituric acid) was used by Perlis. Jackson in 1927 used alurate® (allylisopropylbarbituric acid) and Keller used amobarbital (amytal®). And in 1929 sodium amytal® was used. This was an experimental process. Action of some derivatives was short, of some long. In 1931 Lundy used pentobarbital sodium (nembutal®) and suggested the intermittent use of these drugs. In 1932 Weese first used evipal® (5-[1-cyclohexen-1-yl]-1,5-dimethylbarbituric acid) which was one of the derivatives with the shortest action. In 1934 Lundy brought out thiopental sodium (pentothal sodium®), and this remains the best intravenous agent and is used in every conceivable combination with other agents for the induction of balanced anesthesia.

Rectal Anesthesia.—Pirogoff first gave ether by rectum in 1847. Molière tried this method of administering it again in 1885. Gwathmey used the rectal route to give ether and oil in 1913. Paraldehyde also was administered rectally that year. Chloral hydrate and nearly all of the barbiturates have been so given. But avertin® (tribromoethyl alcohol solution), first given by O. Butzengeiger in 1926, is still the best agent for rectal administration. Trichloroethanol was used clinically by Wood in 1939.

OTHER ADVANCES IN ANESTHESIA

Although ethylene was discovered by Johannes Ingen-Housz in 1779, it was not until 1918 that its anesthetic qualities were investigated by A. B. Luckhardt and R. C. Thompson. It was first used clinically by Luckhardt, Carter and Brown in 1923. This was the first new gaseous agent for inhalation anesthesia since nitrous oxide; it enabled anesthesia to be maintained with a higher percentage of oxygen, thus eliminating some of the asphyxia which resulted from the use of nitrous oxide and oxygen as an anesthetic agent.

In 1923 also, Ralph Waters developed soda lime for use in carbon dioxide absorption. Brian C. Sword introduced the closed circle (filter) method of anesthesia clinically in 1928. Experiments in carbon dioxide absorption had been performed years previously, and Dr. D. E. Jackson of Cincinnati had incorporated a carbon dioxide absorber in his machine in 1915.

Cyclopropane. — Cyclopropane was discovered by August Von Fruend in 1882. The anesthetic qualities of this gas were demonstrated by G. H. W. Lucas and V. E. Henderson in 1928. Then Waters and his associates at Wisconsin, W. B. Neff and E. A. Rovenstine used it clinically in 1933. This is by far the best gas for anesthetic purposes. It has deservedly gained wide popularity and wide usage.

Curare.—Another milestone in anesthesia was the first clinical use of curare for muscular relaxation of the subject by Griffith in 1942, at the suggestion of Louis Wright.

SUMMARY

The anesthetist has a wide variety of agents from which to choose, according to the purpose for which he would use them and the method he chooses to follow. Unlimited combinations of agents may be used to produce anesthesia. Accurate and dependable gas machines control the respiration of the patient. There are excellent tubes for endotracheal and endobronchial use and many types of laryngoscopes for the introduction of these tubes.

The greatest advances have been made in the use of blood, plasma and crystalloid materials to combat hemorrhage and prevent shock. Results of the liver and kidney function tests will influence the choice of an agent. Premedication has become individualized, not only as to patient and operative procedures but as to the agent used. Preoperative preparation has progressed to the point where few patients can be considered inoperable. Better understanding by anesthetist and surgeon of physiology and supportive therapy will bring many patients safely through major surgical operations that would have been fatal a few years ago. This is due in great measure to the large number of departments of anesthesiology that have been established in the medical schools in the past ten years, and to the skilled anesthesiologists who have completed residency training. The future of anesthesiology rests not only in the establishment of a department of anesthesiology equipped to give resident training in every medical school in the country, but resident training must be given in every hospital where a specialist certified by the American Board of Anesthesiology, Inc., heads the department and where the facilities are adequate for competent teaching. Also, arrangements must be made for the training of the part time anesthetist, for certified specialists are woefully inadequate in numbers.

As I look back to the day when the general practitioner, the misfit or the incompetent physician were the ones who usually gave the anesthetics, I can readily understand why the equality of the anesthesiologist in the family of internist, surgeon and obstetrician has been so long delayed. Too few physicians were really interested in anesthesia as a specialty, persistently sought to keep abreast of progress in the field and constantly strove to keep anesthesia on a par with the other specialties in medicine. This has been an unending battle, principally because anesthesia was not attractive either financially or in terms of prestige to the younger physicians. Hence, the number of anesthesiologists fell far below that required to meet the demands of surgical practice. As a consequence, technicians were trained in anesthesiology and in many instances were exploited by the hospitals and in some instances, I am sorry to say, by the anesthesiologists themselves. The specialty will take its rightful place only when there are enough trained anesthesiologists to meet the demands of surgical practice.

Great progress is being made toward meeting that demand, as evidenced by the May 14 issue of The Journal of the American Medical Association, which shows that there are 530 residencies in anesthesiology offered by the various hospitals of this country. In addition there are 94 offered by the Veterans Administration and an additional 27 by the Army, Navy and Public Health Services. In all, 651 residencies are available. This is very encouraging. This program not only should be continued but should be augmented to include the training of part time anesthesiologists if practice of the specialty is ever to revert to the members of the medical profession.

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SOME COMMON FALLACIES AND CONFUSIONS WITH REGARD TO REPAIR OF INGUINAL HERNIA

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During the recent war I was constantly being amazed at the state of confusion in the minds of young medical officers as to salient points in the operation for inguinal hernia which those of us in the older generation had thought to have become so fixed as to be almost as well known as the Ten Commandments. Since the war, in visiting various Army hospitals as surgical consultant, I have found the same confusion to exist. Nor is the confusion limited to young medical officers. Reports appearing in the medical literature from civilian surgeons show the same confusion to exist with them. A great many of these authors speak in an authoritative manner from a very limited experience, as indicated by their own reports. If they were more experienced, they would not be so authoritative and dogmatic. A recent article[1] contains the following statement: "Contrary to general opinion, the Halsted operation employs the principle of suture of the internal oblique and conjoined tendon to the shelving edge of Poupart's ligament without anterior transposition of the cord." All those familiar with the development of the modern operation for inguinal hernia will recognize this at once as an incorrect statement. Many such misstatements are constantly being made, both in and out of the surgical literature. One wonders how such errors have gained headway. Can it be that the subject of hernia is improperly taught in many of the medical schools? Are not some of the professors of surgery themselves a little confused about some of the points in repair of inguinal hernia?

The influence of the written word is far reaching, no matter how incorrect the written statements may be. The influence of the spoken word, when spoken by those in authority (as well as by lesser persons), is scarcely less far reaching. The old logical fallacy of *argumentum ad verecundiam* (argument to authority) is still prevalent even in this supposedly ultrascientific age.

The object of this paper is not to condemn those who have made the errors—the errors are entirely too common for general condemnation. A great many of them have come about naturally and, I believe, are due to a type of legendary teaching, rather than being inspired by reference to original sources.

There are many persons who think that the custom of attaching the names of surgeons to operations is unwise. It undoubtedly is in some ways, but the system is with us, and is found to be very convenient both in talking and in writing about a great many of the best known operations. In this paper I hope to point out some of the confusions in nomenclature, as well as the reasons for their having come about, and to discuss some of the salient principles in the operative repair of inguinal hernia which are often neglected. I trust that my readers will condone any mistakes I may make in trying to correct those of others. To err is human.

STANDARD MODERN OPERATIONS

Halsted[2] and Bassini[3] are rightly considered the fathers of the modern operation for the repair of inguinal hernia. These two great surgeons developed their operations simultaneously and entirely independently of each other, and published the reports of their operations at approximately the same time (1889-1890).[4] Their operations differed principally in the fact that in Bassini's operation the cord was transplanted between the internal oblique muscle and the aponeurosis of the external oblique muscle. In Halsted's operation the cord was transplanted external to the aponeurosis of the external oblique in the subcutaneous position. Halsted originally resected most of the veins of the cord, but later abandoned this procedure because he encountered cases of atrophy of the testis as a result of it. Both operators sutured the internal oblique muscle to Poupart's ligament (inguinal ligament). Neither of these surgeons overlapped the aponeurosis of the external oblique muscle in making their closure but simply approximated the edges of that structure.

Ferguson,[5] of Chicago, was the first of the post-1890 workers in the field of hernia surgery to adopt the method of nontransplantation of the cord, leaving it undislocated in its bed. He insisted that this operation was better than those in which the cord was transplanted, as it did not disturb the normal anatomy of the patient. It is true that prior to Ferguson's publication Coley[6] had reported operations in which he had left

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From the Department of Surgery of the Johns Hopkins University School of Medicine.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

[1] Farris, J. M.; Ettinger, J., and Weinberg, J. A.: The Hernia Problem, with Reference to a Modification of the McVay Technique, Surgery **24**: 293-303 (Aug.) 1948.

[2] Halsted, W. S.: Radical Cure of Hernia, Bull. Johns Hopkins Hosp. **1**: 12-13 (Dec.) 1889. (The paper was presented before the Johns Hopkins Medical Society on Nov. 4, 1889).

[3] Bassini, E.: Ueber die Behandlung des Leistenbruches, Arch. f. klin. Chir. **40**: 429-476, 1890.

[4] Bassini made two earlier reports, but they were published in little read Italian journals (Arch. d. Soc. med. ital. **2**: 179-181, 1889; Arch. d. Soc. chir. ital. **5**: 315-319, 1888), which did not reach the attention of the medical public.

[5] Ferguson, A. H.: Oblique Inguinal Hernia: Typical Operation for Its Radical Cure, J. A. M. A. **33**: 6-14 (July 1) 1899.

[6] Coley, W. B.: Operative Treatment of Hernia, with a Report of Two Hundred Cases, Ann. Surg. **21**: 389-437, 1895; Radical Cure of Hernia, with a Report of Three Hundred and Sixty Cases, ibid. **25**: 270-305, 1897. Bull, W. T., and Coley, W. B.: Observations upon the Operative Treatment of Hernia at the Hospital for the Ruptured and Crippled, ibid. **28**: 577-604, 1898.

the cord in its bed. While he considered the operation had much to commend it, he stated that his cases were too few to enable him to estimate its comparative value, and in the large majority of his reported cases the repair was done by the Bassini method, which he considered superior to all other methods.

Andrews,[7] of Chicago, was the first American to adopt the principle of the imbrication of the aponeurosis of the external oblique in making its closure. In making the imbrication, he placed the cord between the two flaps of the aponeurosis—a method now little used. He sutured the edge of the inner flap of the aponeurosis of the external oblique to Poupart's ligament, along with the internal oblique muscle and the transversalis fascia. The cord was then dropped on this inner flap and the outer flap was sutured over the cord, leaving the cord between the two flaps. Here, again, it is true that Lucas-Championnière,[8] in France, had overlapped the flaps of the aponeurosis before Andrews. However, his imbrication had been a simple overlapping; furthermore, he had not stressed the point as much as Andrews did, and therefore Andrews' name has come to be more associated (in this country at least) with the procedure than that of Lucas-Championnière.

The operation, then, of utilizing the principles of nontransplantation of the cord and of the imbrication of the aponeurosis of the external oblique came to be known as the Ferguson-Andrews operation.

While this operation was being developed, Halsted also had been trying to improve his original operation and had been experimenting with methods other than his original one. In 1903 [9] he published the results of his clinical investigations, and his new operation turned out to be essentially the same as the Ferguson-Andrews operation. As pointed out in his article, he had tested the relative value of nontransplantation of the cord from the very outset and had also utilized the principle of the simple imbrication of the aponeurosis of the external oblique. He had, therefore, again independently worked out the procedures described by Ferguson, Andrews and Lucas-Championnière. Halsted was at that time the leading exponent of hernia surgery in America, and his operation began to be called, in places outside Baltimore, the Hopkins operation and the Halsted II operation. In Baltimore it was called the Ferguson-Andrews operation, and I believe that that is the proper designation. Although the operation was worked out by Halsted independently, Ferguson and Andrews first published the salient principles involved in it, and therefore their names should have priority. Certainly, if any operation were to be called the "Hopkins operation," it should be the original Halsted operation, for that operation was developed at the Johns Hopkins Hospital by Halsted, the first professor of surgery in the Johns Hopkins School of Medicine.

From the foregoing survey, I believe it becomes clear why the authors spoken of in the first paragraph fell into the erroneous notion that in the Halsted operation the cord was not transplanted.

CHOICE OF OPERATION

What is the best type of operation for the repair of inguinal hernia? Certainly, there is no unanimity of opinion with regard to this question. Certainly, also, the type of operation should be made to fit the anatomy of the patient being operated on. This is especially true in the operation for recurrent hernia. There is, however, no unanimity of opinion as to the best type of operation to be used for the ordinary, run-of-the-mine, primary indirect inguinal hernia. Unfortunately, follow-up statistics on any large scale are not available. Indeed, it is difficult to obtain reliable follow-up statistics. A very large percentage of patients will not answer follow-up letters. Others will have moved and cannot be contacted.

Judging from the literature and from conversations at meetings with surgeons from various parts of the country, I am inclined to believe that the Bassini operation is the most popular in the country at the present time. The original Halsted operation (subcutaneous transplantation of the cord), however, has come to be more and more used during the last ten to fifteen years. The Ferguson-Andrews operation is apparently less used than formerly. It was pretty consistently used by Halsted from the time of the publication of his article in 1903 [9] until his death, in 1922. His many pupils throughout the country also used it (except in cases of direct hernia, recurrent hernia and indirect hernia in which there was a large defect near the pubic bone), and some of them still do. In the middle 1920's, however, the operation began to lose its popularity, and it is certainly now less used than the other standard procedures. The Cooper ligament operation, first used by Lotheissen [10] in 1898 for the repair of inguinal hernia, has been revived by McVay and Anson [11] and has gained considerable popularity, which, in my opinion, is highly merited. The use of strips of fascia, both autogenous [12] and preserved,[13] is not so common as it once was. Burdick [14] and his co-workers have shown that the incidence of infection is greater with both these materials than with the ordinary suture materials used in surgical practice. The McArthur procedure [15] has merit and is still used by a fair number of surgeons.

CAUSES OF RECURRENCE

At a recent round table discussion of the subject of hernia which I conducted, the question was asked, What makes a hernia recur? That is certainly a pertinent question, and one to which every thoughtful surgeon has necessarily given a great deal of thought. This question must be taken into consideration, not only in deciding on the type of operation to be used, but also in the actual execution of whatever operation is decided on. No matter what operation is used, there is now no difference of opinion as to the proper handling of the sac. The principle of high ligation has become so axiomatic as to require no discussion. There are thousands of cases to show that good results may be obtained by any of the aforementioned well recognized methods for the plastic repair, after the sac has been properly dealt with. What, then, are the factors concerned in the recurrence of hernia after repair by any of the approved methods? I venture to suggest the following as four of the principal causes: (1) the presence of areolar tissue, left on important structures which are to be sutured together; (2) tension; (3) use of absorbable sutures, and (4) poor tissues.

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Areolar Tissue.—The importance of removing areolar tissue from important structures, such as muscle and fascia, which are to be sutured together was fairly well demonstrated by me more than twenty years ago.[16] To leave areolar tissue on such structures results in a thin, flimsy type of union, which has no strength whatever. *Removal of the areolar tissue, so that the* important structures can come into close contact and intimate apposition with each other, results in a very firm type of union. In operating for recurrent hernia, every surgeon has seen, time and time again, the internal oblique muscle firmly united to Poupart's ligament throughout part of the original suture line and entirely pulled away from it throughout the remaining part. What is the reason for this firm union in one place and nonunion in the other? It might be that at the previous operation the areolar tissue had not been thoroughly cleaned off both structures throughout the entire length of the suture line. No doubt, of course, undue tension also plays a part. Be that as it may, I am convinced that many surgeons pay too little attention to ridding thoroughly all important structures of areolar tissue before suturing them together.

Tension.—For several decades there has been much talk about the elimination of tension in suturing the various layers in the repair of inguinal hernia. Sometimes the very surgeons who have talked most about it in lectures have failed to put the principle into practice at the operating table. I have seen such surgeons approximate tissues under such tension that only the strength of their heavy sutures enables them to bring the tissues into apposition. There are unquestionably times when, in order to close a defect at all, some tension is required. However, such tension can be greatly reduced, and almost entirely eliminated, in the repair of inguinal hernia by using the important method of Halsted,[9] recently revived by Fallis,[17] Rienhoff,[18] Tanner [19] and others, of making an incision in the sheath of the rectus abdominis muscle. This procedure gives nearly complete relaxation of the inguinal structures and almost invariably permits them to be sutured together without any tension whatsoever. Such an incision does not weaken the anterior abdominal wall. It was shown many years ago,[13a] in connection with other experimental work of mine on hernia repair, that the anterior sheath of the rectus abdominis muscle may be resected with impunity because it repairs itself. (Stone [20] made use of this principle, when necessary to make incisions for relaxation, in his operation for umbilical hernia. His operation, in my opinion, is entirely too little used.) In making the relaxation incision of Halsted in the anterior sheath of the rectus abdominis muscle, care should be taken to place the incision over the center of the muscle, and not at its lateral border. If the incision is placed at or near the lateral border, the retraction of the cut edge of the sheath is likely to leave a gap along the lateral border of the muscle, with nothing between the posterior sheath of the rectus abdominis and the subcutaneous tissue when the final closure is made. This might weaken the abdominal wall at this point. The same reasoning would be an argument against Halsted's [9] method of reflecting a flap of the anterior sheath of the rectus abdominis over to Poupart's ligament in making the hernia repair.

Absorbable Sutures.—In my opinion, the use of absorbable sutures in hernia repair is an invitation to disaster. *I say this in spite of the fact that some* outstanding men (among them, one of my most distinguished colleagues) use absorbable suture material routinely. *My reason for condemning the practice is that one cannot rely on the length of time that absorb*able sutures will stay in position; certainly, it is necessary that any suture material used should keep in close apposition the important structures used in hernia repair until firm healing has taken place. Failure to do this is bound to result in recurrence.

Poor Tissues.—Every surgeon has operated on hernias in which the tissues were so poor that he felt discouraged and foredoomed to a recurrence. Various methods have been used to overcome this handicap, such as flaps of fascia, free transplants of fascia, preserved sheets of fascia [21] and autogenous [12] and preserved strips of fascia.[13] Most surgeons have used all of them, with varying degrees of success. Recently, in cases with very poor structures I have been using a small piece of tantalum mesh,[22] sutured in place over the first line of sutures (conjoined tendon to Cooper's [pectineal] or to Poupart's ligament, as the case may be) and under the aponeurosis of the external oblique muscle. The method has not been used long enough to permit a proper evaluation of it clinically. However, experimental work with it indicates that the fibrous reaction around and through the mesh is so strong that the results will be far better than those obtained with the other methods mentioned.

HANDLING OF THE CORD

The method of handling the cord is one in which there is no unanimity of opinion, as shown by the fact that it is handled in different ways in three of the best known operations for repair of hernia, namely, the Halsted, the Bassini and the Ferguson-Andrews operation. Here, again, there are no reliable follow-up statistics to give a clue to the best procedure. When Coley [23] wrote his chapter on hernia for Keen's "Surgery" in 1908, there had already been observed (1890 to 1906 inclusive) at the Hospital for the Ruptured and Crippled in New York 75,000 cases of hernia. Since then, there have probably been several times that many. What an opportunity for one group of surgeons to try each of the several approved methods of hernia repair in thousands of cases and to compare the results! However, so far as I know, no such clinical experiment has ever been tried on a large scale. The surgeon, then, has to handle the cord as he thinks best, on theoretic grounds largely. I, personally, was first trained in the Ferguson-Andrews operation; I then switched to the Bassini method, and I now routinely use (in adults) the Halsted type of transplantation of the cord. I do this because, in my opinion, if the cord is to be transplanted at all (and I believe in transplanting it to remove the weak spot from the lower angle of the wound), it is better not to leave it between the conjoined tendon and the aponeurosis of the external oblique. If there is no structure such as the cord between these two layers, they will grow together, and the combined structure will form a firmer buttress against intra-abdominal pressure than if it is separated into layers by the cord. Furthermore, subcutaneous transplantation of the cord allows a tight closure of the aponeurosis of the external oblique right down to the spine of the pubis, further strengthening the site of usual recurrence. The main objection that has been raised to the subcutaneous transplantation of the cord is that in certain instances, especially in thin persons, it may prove a source of tenderness. I have never seen this occur.

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COOPER'S LIGAMENT REPAIR

During the last three years I have used Cooper's ligament operation rather routinely. McVay and Anson[11] have done surgery a great service in pointing out that this ligament is in the same fascial plane as the conjoined tendon, while Poupart's ligament is in a superior fascial plane (the same as that in which lie the aponeurosis of the external oblique muscle and the fascia lata). This being true, it is more logical to suture the conjoined tendon to Cooper's ligament than to Poupart's ligament. To suture it to Poupart's ligament is to transpose the fascial planes. Besides, in actual practice, one certainly has a greater sense of security, after the first line of sutures is placed, in Cooper's ligament repair than in operations in which the conjoined tendon is sutured to Poupart's ligament. In Cooper's ligament operation the ligament should be thoroughly exposed before any sutures are placed. This is not the practice of some surgeons. House men in some of the hospitals in which I work have told me, when assisting me in this operation for the first time, that they had never before seen Cooper's ligament, although they had assisted other surgeons in doing Cooper's ligament repairs. To put sutures into this ligament blindly is wrong, for two reasons: 1. If the loose preperitoneal areolar tissue covering the ligament is not first cleared away, a firm union of the sutured structures will not be obtained, as already pointed out.[16] 2. Unless the ligament is thoroughly exposed, so that one knows exactly what structures are being pierced by the needle, one may encounter severe bleeding from aberrant vessels, and even the femoral vein itself may be injured. The statement is often made that the internal oblique muscle should not be sutured to Cooper's ligament (or to the inguinal ligament in other types of hernia repair). What do these surgeons do in those cases in which there is no transversalis fascia? Such cases are by no means infrequently encountered. In these cases, if the internal oblique muscle is not sutured to the ligament, there is nothing to suture to it (unless fascia is transplanted). It is fine to be theoretic about "white fascia" apposition, but one cannot always pull white fascia out of a hat. It has been, I believe, amply demonstrated that muscle will grow to fascia[16] if the areolar tissue is carefully removed from both structures before they are sutured together. It has also been demonstrated that the union is in reality a fascia to fascia union, the fibrous components of the muscle (the epimysium, perimysium and endomysium) forming the union with the fascia and the muscle fibers themselves being completely inert in the process. Of course, pure white fascia would form a stronger union with Cooper's (or Poupart's) ligament than muscle, because the white fibrous elements are more abundant in pure white fascia than in muscle. However, when the former is absent, the latter has been proved to be an excellent substitute. Those cases in which the surgeon is not satisfied with the strength of his first suture line are logical opportunities for the implantation of a strip of tantalum mesh over the suture line to strengthen it.

EARLY AMBULATION

I am in favor of early ambulation. The main argument against it is that it puts too much strain on the suture line. Admittedly, it does place strain on the suture line; but if the suture line will not hold in spite of the strain, the hernia will recur anyway. The straining that frequently occurs while a patient is coming out of anesthesia puts a terrific strain on the suture line. I have seen patients under general anesthesia break strong heavy silk sutures by straining when anesthesia was allowed to become too light. Postoperative straining while the patient is coming out of the anesthesia should be prevented by early sedation. It has been shown that the strain of putting a patient into opisthotonos on a bedpan increases the intra-abdominal pressure as much as early ambulation.[24] Coughing, vomiting and straining at stool increases it much more.[24] With early ambulation the patient does better in every way and there are fewer complications, as has repeatedly been stated in the literature. Healing probably takes place faster, for two reasons: Ambulation (1) increases the blood supply to the wound and (2) tends to keep the patient in positive nitrogen balance—keeping a well patient in bed causes a daily loss of nitrogen.[25] Early ambulation, however, does not mean that a patient should sit in a chair for hours at a time, especially during the first few days after operation. Such a posture angulates the veins in the groin, just as Fowler's position does, and increases the tendency to thrombosis. It is preferable to have the patient either lying flat or walking around during the first few days. As a further precaution against thrombosis, I give dicumarol® as a routine prophylactic measure in the case of patients of middle age or older, and of younger persons when indicated. To discuss the details of this medication is not within the scope of this paper.

SUMMARY

Some common fallacies and misconceptions with regard to the repair of inguinal hernia are discussed, and some neglected principles are reiterated.

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ABSTRACT OF DISCUSSION

Dr. Guy W. Horsley, Richmond, Va.: Dr. Koontz has fallen into the commonest fallacy of all writers on inguinal hernia repair which has resulted in much confusion among surgeons; that is, he has discussed indirect and direct hernia as one. They are quite different conditions and are alike only in that they involve the same structures. The operative repair of an indirect hernia is usually quite different from the operative repair of a direct hernia. The origin of these hernias is different. The indirect hernia in general is congenital in origin; the sac persists from infancy and, gradually increasing in size, separates the inguinal structures. The direct hernia is primarily due to weakness of the structures and strain over a long period, and the sac is secondary to this weakness. When one is operating on an indirect hernia, the most important procedure is the total removal of the sac. Dr. Koontz has stated that this is axiomatic and requires no discussion. Unfortunately, the bulk of literature deals with methods of repair of the inguinal canal and the fundamental step of treatment of the sac becomes obscured and at times forgotten. I am convinced that complete removal of the sac is all that is necessary to cure what Dr. Koontz calls the "run-of-the-mine primary indirect inguinal hernia." This is all that I do in infants and young children, unless the sac is so large that it has displaced the inguinal structures. In the operations for direct inguinal hernia the fundamentals are reversed. Here the repair of damaged and weakened structures is of primary importance and removal of the sac or bulge is secondary. In some of the smaller bulges it may not be necessary to open the peritoneum. Reconstruction of the transversalis fascia is most important, and over this the conjoined tendon and muscles should be sutured without tension, as described by Dr. Koontz. Except in infants and children in whom repair of the inguinal canal is not necessary, I routinely use a modified Bassini technic. This modification is to suture, whenever possible, the transversalis fascia first before suturing the conjoined tendon and the internal oblique muscle to Poupart's ligament. I do not subscribe to any fixed or routine technic for all cases but believe that one has to individualize the operation to fit the specific patient. In any technic one must follow the principles which have just been so well laid down by Dr. Koontz, such as the removal of all areolar tissue on structures to be sutured together, avoidance of tension and the use of fine, nonabsorbable sutures.

Dr. Bradley L. Coley, New York: It was gratifying to hear Dr. Koontz's presentation on inguinal hernia. Many persons adopt an attitude of complacency and satisfaction with the results of surgical measures for correction of this condition—one that is numerically of great importance. Actually, the end results of surgical treatment are still far from satisfactory despite the gradual lowering of the recurrence rate as judged by statistics published by many of the large surgical clinics in this country. Dr. Koontz has summarized concisely the important basic types of operation. He has defined the two operations of Halsted which I, too, have found to be unfamiliar to many of the younger surgeons. Ferguson's operation is not widely employed today, although in young children it seems to me to be a useful and adequate procedure. Indeed, the Hamilton Russell operation, which is even simpler in that it consists solely in high ligation of the sac without suture of conjoined muscle to Poupart's ligament, will cure many of the congenital indirect hernias in early childhood. For adults, especially patients with large indirect sacs or with those which are direct in type, I am in accord with the trend toward the use of the Cooper ligament operation. However, the unmodified Bassini repair is undoubtedly the most widely used procedure and is on the whole a satisfactory method for uncomplicated indirect inguinal hernia. My objection to the technics which bring the cord into a subcutaneous position, e. g., Halsted I, lies in the fact that by this method the cord emerges directly through all the layers of the abdominal wall, and this tends to favor a protrusion at the internal ring, or a so-called indirect recurrence. As to the causes of recurrence, clean and sharp dissection will avoid interposition of areolar tissue between layers of the repair. Nonabsorbable suture material has decidedly lowered the recurrence rate by greatly reducing the incidence of infection. Avoidance of tension seems inescapably important. I am wholly convinced of the value of early ambulation if one insists that the patient ambulate and not vegetate in a chair. I do not allow chair-sitting until the patient has been up and walking for a week. Early ambulation means the evening of the day of operation, or, at the latest, the next morning. I support the belief that it is much easier to prevent a recurrence by the proper choice of an operation suited to the individual hernia than it is to cure the recurrence by a second or a third operation. I do not believe in a rigid, standardized technic for all inguinal hernia.

Dr. Leigh F. Watson, Los Angeles: Dr. Koontz is to be congratulated on the thorough manner with which he has dealt with the problem of hernia and emphasized the value of the Halsted operation, which is probably the best for indirect inguinal hernia. Those of us who have attended his clinic have marveled at his skill and dexterity. He has presented an accurate picture of the development and merits of the various operations for inguinal hernia. In addition to the historical facts presented by Dr. Koontz, my observations are that at present the treatment of hernia is a subject of wide divergence of opinion and is likely to remain unsettled as long as statistics on recurrence from twenty-five leading clinics vary from zero to 30 per cent. Dissatisfaction will remain until the perfect operative technic is devised and universally adopted. Unfortunately, as stated by Dr. Koontz, there will still be the patient with deficient muscles and fascia and other handicaps to tax the skill and try the patience of the surgeon. In a series of 2,250 patients with inguinal hernia who came to me over the last five years, I found that there were 286 with one to four recurrences following operative correction elsewhere. A study of the case records of the 286 patients reveals that approximately 25 per cent of the hernias developed immediately after the operation; 28 per cent in the first six months; another 15 per cent in one to six months; 30 per cent in six months to five years; 15 per cent in five to ten years; 10 per cent in ten to twenty years, and 5 per cent in twenty to thirty years after operation. The percentage of recurrence in direct hernia operations is 10 to 20 per cent in the hands of the most experienced operators. Many surgeons report that the recurrence rate is between 25 and 50 per cent. The number of indirect inguinal hernias that recur after operative correction varies from 5 to 10 per cent, depending on the age of the patient and the choice of operation. Recurrence is lowest in patients between 10 and 45 years of age. After the Bassini operation, indirect inguinal hernias most frequently recur through the opening left for the cord; occasionally they come through the deep suture line just above the pubis, and rarely through the middle of the suture line or a weak spot in the muscles or fascia. The Cooper ligament operation has shown a lower percentage of recurrences than the inguinal ligament operation (Bassini) and is steadily supplanting the latter in popular favor among surgeons, although the Bassini procedure presents fewer technical difficulties.

Dr. Roland I. Grausman, New York: I want to emphasize one point that Dr. Koontz made: with a large defect in the fascia and when the edges can be brought together only with great tension, tantalum mesh is of great value. In the last two years, I have had 4 cases in which tantalum mesh has been used with great success. I would like everyone present to consider using this method when he encounters a difficult or large recurrent hernia.

Dr. Amos R. Koontz, Baltimore: Dr. Horsley's remarks about the difference between indirect and direct hernias are certainly well taken. I had not the faintest notion of conveying the idea that I was trying to present the same method for both types of hernia. As a matter of fact, I was not discussing any method but was trying to present certain salient principles of hernia repair. The difference between the two types is well known. Indirect inguinal hernia is congenital, or at least considered so. I personally believe that direct hernias also are due to congenital weakness of the structures of Hesselbach's triangle. The method of repairing them should be different in many cases, and every hernia should be treated as an individual problem and not repaired by any routine procedure. However, I do feel that for large indirect hernias which have caused atrophy of the surrounding tissues, the method of repair should be the same as that for direct hernias. The method of treating small inguinal hernias simply by removing the sac was initiated by Russell many years ago in Australia. One of his pupils, Craig, recently published an article in which he said that that simple operation must be supplemented by something else. His first supplemental method was implantation of phenol and olive oil in the exposed area of transversalis fascia. I will leave that with you for what it is worth. The second method was turning in the hernia sac and afterward suturing the edges. He made the statement that the sutures will not pull out because the tissues of transversalis fascia are very strong and will hold the sutures. I am certain that that statement is at variance with the experience of many surgeons in many cases in which it has been impossible to find any transversalis fascia at all. Dr. Coley objected to the Halsted operation in the transplantation of the cord subcutaneously. He said that putting both the internal and external ring over each other might tend to indirect recurrence. It might, of course, but I don't believe that it does in most instances, because it is well known that most recurrences are direct occurrences that occur close to the pubic bone. If the indirect sac is thoroughly taken away, one just doesn't get recurrences at the internal ring. I agree with everything Dr. Coley said about early ambulation.

ACUTE CRANIOCEREBRAL TRAUMA

Essential Considerations of Diagnosis and Treatment

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Theoretically, acute head injuries are within the domain of the neurosurgeon. The magnitude of the problem is such, however, that for practical reasons most such injuries cannot be treated by specialists in this field. They will probably remain, just as they are at this time, the responsibility of general surgeons and even of general practitioners.

Since this situation exists and since it is unlikely to be altered, its implications must be faced. The correct management of acute head injuries constitutes a real challenge to the whole medical profession at this time. Increasing industrialization and the increasing use of mechanical means of transport will add to the problem as time passes. It is, therefore, essential that the general surgeons and general practitioners who are called on to direct the management of these injuries comprehend the nature of the traumatic process, be able to make precise diagnoses, be prepared to administer appropriate emergency treatment, and, perhaps most important of all, be trained to recognize without delay the danger signals which indicate the need for the services of a neurosurgeon.

The current literature on head injuries is frequently confusing and contradictory. Furthermore, much of it is too highly technical to be of great value to any one but the trained neurosurgeon. The purpose of this communication is, therefore, to outline as simply as possible—even at the risk of occasionally seeming dogmatic—the essential considerations in the diagnosis and treatment of acute head injuries.

ESTABLISHMENT OF A CLINICAL BASE LINE

The first consideration in the management of an acute head injury is the establishment of what might be termed a clinical base line, against which the patient's future course may be evaluated. The base line includes three factors: the vital signs, the level of consciousness and the state of the pupils.

The temperature, pulse, respiratory rate and blood pressure are determined and recorded as soon as the patient is seen. These vital signs furnish an invaluable index of the function of the medullary and midbrain centers. They are redetermined at brief, regular intervals, and nurses are warned that the physician in charge must be notified without delay of any consequential change in any of them.

The level of consciousness significantly influences both the prognosis and the therapy. It is best recorded on the basis of Botterell's [1] classification of coma, semicoma and confusion. Coma denotes a state of unconsciousness in which there is no response to any sort of stimulus. Semicoma denotes a state of unconsciousness in which the patient responds to such painful stimuli as deep supraorbital pressure. Confusion denotes a state of disturbed consciousness characterized by the inability to think clearly or to respond accurately to situational stimuli. The general levels of consciousness should be described in these terms, supplemented with whatever details further clarify the descriptions.

The state of the pupils is recorded in terms of size, reaction, and equality or inequality. Pupillary function is second in importance only to the state of consciousness in following the patient's progress.

DIAGNOSTIC CONSIDERATIONS

Nature of the Injury.—The exact site and extent of the injury furnish the first diagnostic information. All details should be recorded, including those of lacerations and contusions of the scalp. From the diagnostic standpoint, the extrusion of pulpified brain or of cerebrospinal fluid from a wound of the scalp indicates severe laceration of the dura mater and the cerebral tissue. The leakage of cerebrospinal fluid from the nose or ears is positive evidence of a fracture through the anterior or middle fossa, with laceration of the dura. If the supplemental otoscopic examination reveals a bluish discoloration of the tympanic membrane, it may be presumed that the fracture is through the middle fossa of the skull.

State of the Pupils.—The state of the pupils, in addition to serving as part of the clinical base line, is of great diagnostic significance. The following are the most important considerations:

1. Pupillary inequality associated with impairment of the light reflex as it applies to the dilated pupil may indicate any one of four possible pathologic processes: (1) extradural hemorrhage; (2) herniation of the temporal uncus through the tentorium; (3) tearing of the oculomotor nerve from its origin in the brain stem, and (4) direct injury of the nerve in the orbit with spicules of bone.

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Read before the Section on Surgery, General and Abdominal, at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

[1] Botterell, E. H.: Personal communication to the authors.

2. The unilaterally dilated, fixed pupil is pathognomonic of an extradural hemorrhage, the lesion usually being on the same side as the altered pupil. Some observers have questioned the value of this localizing sign because it may be caused by lesions other than an extradural clot. We do not share this point of view. We cannot emphasize too strongly that, from a practical standpoint, lives will be saved if it is assumed that every patient with a unilaterally dilated, fixed pupil has an extradural clot until he is proved not to have one. An operation in such circumstances may be life saving; procrastination may be fatal. This teaching may have a taint of dogma, but the generalization is nonetheless sound that every physician called on to treat head injuries should accept the thesis that progressive unilateral dilatation of the pupil is pathognomonic of extradural hemorrhage and that he should act accordingly.

3. Small, contracted pupils (unless the patient has received morphine) indicate severe medullary damage. Fixed, dilated pupils usually indicate the terminal stages of brain injury. These two phenomena are always of serious significance.

4. External examination of the eyes should be supplemented with ophthalmoscopic examinations at regular intervals. Progressive choking of the optic disks indicates a severe degree of increase in the intracranial pressure. Unequivocal choking of the disks usually does not develop for several days, but venous engorgement, retinal hemorrhages, blurring of the disk margins and obliteration of the normal landmarks occur much earlier and are valuable indexes of the degree of intracranial tension.

Determination of Facial Nerve Function.—Determination of the function of the facial nerve is useful in the demonstration of hemiplegia or hemiparesis. The conscious patient can cooperate in the examination. If the patient is semicomatose or confused, grimacing may be stimulated with supraorbital pressure or with some other painful stimulus which will permit evaluation of the function of the facial muscles. If the patient is comatose, some reliance can be placed on the rule that the cheek on the paralyzed side puffs out with respiration more than the cheek on the nonparalyzed side.

Roentgenologic Examination.—Opinions differ rather widely as to the value of roentgenographic examination of the skull in the hours closely following a head injury. Our position is that clear roentgenograms are likely to be of diagnostic aid, but that the difficulty of obtaining them for a confused or disoriented patient far outweighs their possible value. Their chief usefulness is in the demonstration of depressed fractures of the skull or of linear fractures crossing the groove of the middle meningeal artery.

Lumbar Puncture.—Both the diagnostic and the therapeutic value of lumbar puncture in acute head traumas have been greatly overemphasized. Many observers[2] have advocated this measure as a valuable diagnostic adjunct, but lumbar puncture in the case of a restless, uncooperative patient is unlikely to result in inaccurate measurements and is frequently impractical as well. It is doubtful, too, even when there is no blocking of the cerebrospinal fluid pathways in the spinal axis, whether the pressure of the intraspinal fluid ever furnishes an accurate index of intracranial pressure. Kahn's[3] experimental studies support this point of view. When herniation of the brain substance has occurred at the incisura of the tentorium the pressure below the tentorium cannot be an index of the pressure above it, because the free flow of fluid through the incisura has been impeded. Under such circumstances, only measurement of the intraventricular fluid pressure can provide an accurate index of supratentorial pressure.

The dangers associated with lumbar puncture in acute head injuries furnish an additional reason for refraining from this method of diagnosis. The risks of its use in infratentorial mass lesions were clearly demonstrated by Harvey Cushing,[4] but the equally grave dangers associated with its use in supratentorial lesions are not fully appreciated, even by neurosurgeons. Swelling of the cerebral hemispheres as the result of venous stasis and cellular edema brings about an ideal set of physical conditions for herniation of the temporal uncus into the incisura of the tentorium. Furthermore, the sudden release of infratentorial pressure when lumbar puncture is performed aggravates the unnatural pressure relationship and should be considered a potential danger in precipitating or aggravating tentorial hernias.

NONSURGICAL THERAPY

Patients suffering from acute head injuries require careful individual treatment. Routine management according to an inflexible schedule is as useless as it is dangerous. Alert, watchful individualization is the basis of rational therapy. Moreover, since the patient's condition may vary from hour to hour, continuous, efficient nursing care is an essential part of his treatment.

The decision concerning the necessity for surgical intervention must be made promptly in every case. A voluminous literature dealing with conservative therapy in acute head injuries has appeared during the last decade, and there is no doubt that nonsurgical measures are adequate in most cases. Not more than 1 patient in every 5 needs surgical intervention. The identification of the 20 per cent of patients who need an operation is, however, often a perplexing matter; the experienced physician never lets himself forget the disaster that may follow if a lesion requiring an operation goes unrecognized.

The initial care of patients who need surgical intervention and of patients who can be treated conservatively is based on attention to the following points:

Provision of an Adequate Airway.—The first consideration in the management of a semiconscious or unconscious patient is the establishment of an unobstructed airway. The brain is extremely susceptible to anoxemia, and irreparable damage may result in a short time unless oxygen is provided and maintained in adequate supply.

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[2] (*a*) Fay, T.: The Treatment of Acute and Chronic Cases of Cerebral Trauma by Methods of Dehydration, Ann. Surg. **101**: 76-132 (Jan.) 1935. (*b*) Mock, H. E., and Mock, H. E., Jr.: Management of Skull Fractures and Brain Injuries, J. A. M. A. **120**: 498-505 (Oct. 17) 1942. (*c*) Owens, M. J.: The Diagnosis and Management of Acute Head Injuries, Indust. Med. **16**: 169-171 (April) 1947.

[3] Kahn, A. J.: Effects of Variations in Intracranial Pressure, Arch. Neurol. & Psychiat. **51**: 508-527 (June) 1944; correction, ibid. **52**: 71 (July) 1944.

[4] Cushing, H.: Study of a Series of Wounds Involving the Brain and Its Enveloping Structures, Brit. J. Surg. **5**: 558-684 (April) 1918.

Perhaps the simplest method of providing an immediate unobstructed airway is that first advocated by Coleman,[5] which has proved to be one of the most useful advances made in recent years in the management of head traumas. The patient is merely placed on his side with the head down, so that secretions from the trachea and nasopharynx drain through the mouth and nose by the force of gravity. If they are so tenacious that gravity alone is not sufficient to remove them, a soft rubber catheter is inserted into the air passage and is attached to a suction apparatus. The position is of particular value in the treatment of profoundly unconscious patients whose swallowing reflex has been abolished.

Once an adequate airway has been established, oxygen should be administered to every unconscious patient. Administration with a nasal catheter is satisfactory, but the use of a tent is preferable.

Indications of Shock.—Traumatic shock is so seldom present in cases of uncomplicated head injuries that a patient in a state of shock should be carefully examined for other possible injuries, such as a broken neck, a fractured femur or a ruptured viscus. Hemorrhagic shock, on the other hand, is not infrequently associated with extensive lacerations of the scalp which have not been sutured promptly.

Treatment of Restlessness.—Restlessness is often a disturbing early complication in acute head injuries. When it is of only mild degree, simple nursing measures are sufficient; when it is extreme, sedation must be employed. Paraldehyde, which may be given by mouth, by rectum or by vein, according to necessity in the particular case, is by far the safest and best of the sedative drugs. The barbiturates are likely to excite a restless patient rather than to quiet him, and morphine, at least in the conventional dosages, should be avoided because of its depressing effects on the respiratory centers. Physical restraint should be employed only as a last resort, since it is likely to make the patient combative and thus increase his restlessness.

Treatment of Hyperthermia.—Because the hypothalamic centers are peculiarly susceptible to trauma, elevations in temperature are frequent after head injuries. Temperatures up to 104 F. per rectum need cause no serious concern, but energetic efforts must be made to reduce temperatures above this level. The former custom of keeping the patient covered with blankets, no matter how high the temperature, is no longer acceptable. On the contrary, the first step in the management of hyperpyrexia is to remove all covering, sponge the body with tepid water or alcohol and direct a gentle breeze on the patient from one or more electric fans. In the most extreme cases, the body is also covered with wet towels. In addition to these physical measures, small doses of morphine sulfate (1/8 to 1½ grain [8 to 97 mg.]) given every two hours are sometimes effective in lowering high temperatures.

Maintenance of Fluid Balance.—The dehydration therapy [2a] which was so popular a decade ago in the management of head injuries has been almost universally discarded. Its rationale, which was to prevent cerebral edema, was faulty; cerebral edema, so far as is now known, is not directly related to the fluid balance, and dehydration is both ineffective and dangerous.[6]

The adult of average size must ingest or receive through other channels between 2,500 and 3,000 cc. of fluid every twenty-four hours if a normal state of hydration is to be maintained. An additional 1,000 to 1,500 cc. may be necessary if the weather is excessively hot or if the patient is extremely restless and irritable. This type of patient will dehydrate himself rapidly. Fluids are administered by vein for the first two or three days of unconsciousness and then, if the coma continues, are given through a nasal tube at six hour intervals. A nasal tube cannot be used, of course, if there is a leak of cerebrospinal fluid from the nose or nasopharynx. The best plan is to give 1,000 cc. of a 5 per cent solution of dextrose in isotonic sodium chloride solution, 1,000 cc. of a 5 per cent solution of dextrose in distilled water and 500 to 1,000 cc. of protein-containing fluid (amino acids) every twenty-four hours.

Maintenance of Nutrition.—Maintenance of adequate nutrition for the unconscious patient is always a serious problem, since protein deficiencies develop rapidly if unconsciousness persists more than a few days. A basic caloric and vitamin intake must be maintained throughout the illness by one means or another.

Maintenance of Oral Hygiene.—Any carelessness in respect to the oral hygiene of the unconscious patient may result in parotitis or a parotid abscess. Excessive dryness of the tongue and the oral mucosa, which is likely to occur because of mouth breathing, may lead to infection. The mouth, therefore, must be kept scrupulously clean, and the lips and the oral cavity must be swabbed frequently with mineral oil to prevent drying and cracking of the mucosa.

Maintenance of Urinary Function.—Urinary incontinence, which is always present in the case of an unconscious patient, presents a difficult problem which must be overcome. If it is neglected, bed sores develop and infection of the urinary tract results. If the patient is not too restless, soiling of the bed may be avoided by the simple expedient of placing a urinal between the patient's legs. If incontinence is continuous, drainage of the bladder must be instituted through an indwelling catheter. Infection of the urinary tract usually can be prevented by frequent irrigations of the bladder and the administration of one of the sulfonamide drugs, orally or through the nasal tube, in small doses.

Chemotherapy.—Every patient with a laceration of the scalp or a fracture involving the paranasal sinuses or the middle ear [3] should receive chemotherapy or antibiotic therapy, even in the absence of leakage of cerebrospinal fluid. Similar measures should be adopted in the treatment of all profoundly unconscious patients to reduce the risk of aspiration pneumonia. Unless there is a leak of cerebrospinal fluid, penicillin in the usual therapeutic dosages meets all the necessities of the case. If such a leak has occurred, penicillin therapy is supplemented with the administration of sulfadiazine (1 Gm.) every four hours. The latter drug, unlike penicillin, passes into the cerebrospinal fluid through the barrier of the choroid plexus in concentrations sufficient to make the development of meningitis unlikely.

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[5] Coleman, C. C.: The Management of Unconscious Patients with Special Reference to Posture in the Treatment, Virginia M. Monthly **61**: 270-276 (Aug.) 1934.

[6] Browder, J.: Dangers in the Use of Hypertonic Solutions in the Treatment of Brain Injuries, Am. J. Surg. **8**: 1213-1217 (June) 1930.

SURGICAL THERAPY

Generally speaking, the following varieties of head traumas should always be treated surgically:

Gunshot and Missile Wounds of the Brain.—This type of head injury, while it is of the greatest importance in time of war, occurs so infrequently in civilian life that there is little justification for an extended discussion of it in the present paper. For full details concerning its management, the reader is referred to the recently published monograph by Matson,[7] which is both sound and comprehensive.

Depressed Fractures of the Skull.—A depressed fracture of the skull is likely to result whenever the head comes in contact with a rapidly moving object, whether large or small, such as a hammer, the butt of a pistol, a monkey wrench, a bottle or the hoof of an animal. The result of the contact is that the skull is bent inward until it literally breaks and a depressed or so-called eggshell fracture results. When the scalp remains intact, the fracture is described as simple. When the scalp is lacerated through the pericranium, the fracture is of the compound depressed type. Although depressed fractures are usually associated with localized lacerations or contusions of the brain, prolonged loss of consciousness is exceptional.

Most simple depressed fractures of the skull require surgical repair because of the underlying damage to the brain. When the indications for operation are not clearcut, electroencephalography may help to clarify the extent of the injury. Surgical repair is indicated when abnormal waves are recorded beneath the fracture site. When the tracings are normal, however, and the skull fragments are only slightly depressed, surgical intervention is not indicated.

All compound depressed fractures require surgical repair. Treatment is purely mechanical, and the order of operation is from the exterior of the skull to the interior. Thorough débridement of the scalp wound is carried out, the broken pieces of bone are removed, the torn meninges are carefully repaired and all contused, devitalized cerebral tissue is cleanly removed by suction. It is essential that débridement be complete. If it is not, a corticomeningeal scar will form and, sooner or later, will act as an epileptogenic focus. Patients with depressed fractures of the skull, in fact, are always potential victims of active or traumatic epilepsy. The repair of the dura mater is an exceedingly important step. Unless a tight closure can be accomplished by approximation of the torn edges, a dural graft of the pericranium should be employed. As to the bony defect, the former practice of preserving all bone fragments and attempting to prop them against each other to achieve repair is no longer recommended. The best current practice is to repair the defect primarily or secondarily with a tantalum plate or with one of the acrylic resins. Cranioplasty by this technic proved highly satisfactory in thousands of cases of combat-incurred head injuries in World War II, and the method is rapidly replacing the bone graft technics formerly employed in civilian clinics.

Extradural Hemorrhage.—Of all the serious complications of acute head injuries, extradural hemorrhage should be the easiest to recognize and the most satisfactory to treat. It is nothing short of astonishing, therefore, to find that in most large clinics the mortality for this condition ranges from 30 to 50 per cent. Three reasons for these almost incredibly poor results are (1) diagnostic failure, (2) delay in resorting to surgery when the presence of such a lesion is suspected and (3) the frequency of severe associated injuries. The first two of these causes are readily preventable, even though the third is usually beyond the power of the physician to alter.

The syndrome of extradural hematoma usually takes a classic form. The patient is dazed or rendered completely unconscious for a few minutes by the blow he has sustained. He may then complain of a headache, nausea or a feeling of faintness, but typically he becomes rational for a time. This is the so-called lucid interval, which lasts for an hour or more. At the end of this time, the patient's mental faculties become dulled, he begins to feel drowsy, he falls asleep and sleep merges imperceptibly into coma. The breathing is stertorous, the pulse is slowed and the blood pressure is elevated.

The physical examination reveals an area of puffiness or a mild induration of the scalp and the temporal muscle at the site of the injury. The pupil on the injured side is usually larger than normal and, as previously noted, may be widely dilated and fixed. The contralateral leg and arm are likely to be weak, and a positive Babinski sign may be elicited. Jacksonian convulsions occasionally occur. When roentgenograms have been made immediately after the injury, they usually reveal a linear fracture in the temporal fossa, with the fracture line usually passing across the middle meningeal groove.

In a minority of cases, the classic syndrome just described is not present. The patient may never regain consciousness after the blow, usually because a severe brain injury is also present. Sometimes the lucid interval may be a matter of days instead of hours. Sometimes the unilateral dilatation and fixation of the pupil are absent, especially when the bleeding comes from the anterior or posterior meningeal vessels. An extradural hematoma usually arises from a lacerated area of the middle meningeal artery, but any of the meningeal vessels or even the dural sinuses may be torn, in which case the extradural clot lies over either the cerebral hemispheres or the cerebellum. These and other variations occur in certain cases of extradural hemorrhage, but the classic syndrome is more constant and the pattern and sequence of symptoms are more exact than in most clinical entities.

The mortality in extradural hemorrhage, as already intimated, will not improve until earlier diagnosis becomes the rule and until skilled surgical intervention can be undertaken as soon as the diagnosis has been made or is suspected. Earlier diagnosis, however, is not likely to come to pass until all physicians—including those who care for patients with acute head injuries only occasionally—become familiar with the early symptoms and signs of this complication. Furthermore, while it may be impractical to hospitalize every patient who has been rendered unconscious for a brief period of time by a blow, one simple precaution is perfectly practical: The attending physician can sit down with a responsible member of the family, painstakingly explain to him the early prodromal signs of this dreaded complication and instruct him to rouse the patient at least every two hours during the first twelve hours after injury in order to distinguish between normal sleep and pathologic coma.

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[7] Matson, D. D.: The Treatment of Acute Craniocerebral Injuries Due to Missiles, Springfield, Ill., Charles C Thomas, Publisher, 1948.

Earlier treatment must follow earlier diagnosis. Extradural hemorrhage is not a condition in which the attending surgeon can tell the house staff to watch the patient carefully until he sees him early next morning. When the classic symptoms and signs are present, operation must be performed without delay. When the signs are suggestive but not positive, the policy should be to carry out a burr hole exploration on the slightest indication of deterioration in the patient's condition.

Acute Subdural Hematoma and Intracerebral Hematoma.—Injuries of the brain sufficient to produce laceration and hemorrhage of the cerebral substance are relatively frequent. Usually they are of the contrecoup type. They are likely to lie almost entirely in the frontal and temporal lobes. The subdural hematoma, which probably represents only a small part of the lesion, is relatively small. However, when intracerebral bleeding occurs the hemorrhage may be massive and the blood may be either clotted or laked.

It is often impossible to distinguish before operation among extradural, subdural and intracerebral hematomas, but the differentiation is merely academic since all three lesions demand prompt surgical exploration. Intracerebral bleeding should be suspected and burr hole exploration should be carried out without delay in all cases of head injuries in which progressively deepening coma and changes in the vital signs suggestive of increased intracranial pressure or evidence of progressive neurologic dysfunction are noted. Unfortunately, patients with lesions of this sort are often moribund when they are first seen.

Chronic Subdural Hematoma.—Although it is customary to classify subdural hematomas in the acute and chronic categories, the classification is not particularly satisfactory. Acute subdural hematomas are usually associated with cerebral laceration and considerable brain injury, whereas chronic hematomas may result from minimal trauma and may be associated with little or no actual cerebral damage. The slow progression of the chronic variety is its distinguishing characteristic. The pathologic process is basically a tearing of the cortical veins which extend from the cerebral cortex to the sagittal sinus. Pudenz and Shelden,[8] who studied the effect of subconcussive blows and gunshot wounds of the head on the brains of macaque monkeys fitted with lucite® calvariae, satisfied themselves that this was what occurred after such injuries. It therefore seems reasonable to assume that any condition which produces an unusually wide gap between the sagittal sinus and the leptomeningeal attachment of these veins will add to the likelihood of such a lesion. Cortical atrophy as the result of alcoholism is one such condition, and the vascular changes of old age are another.

Clinically, it is often impossible to distinguish chronic subdural hematoma from brain tumor because of the similarity of the symptoms. Further confusion is introduced by the fact that the causative trauma is often so inconsequential that it is entirely overlooked by the patient and his family. The major presenting symptoms are headaches of increasing severity and mental dulness progressing to somnolence, sometimes followed by convulsions or hemiparesis. The signs are those associated with increased intracranial pressure, such as papilledema, slowing of the pulse rate and a gradual increase in the systolic blood pressure. The lumbar spinal fluid pressure is likely to be increased, and the fluid is characteristically slightly xanthochromic.

Bilateral burr holes should be placed in the superior temporal regions whenever the presence of a subdural hematoma is suspected. A bluish discoloration of the dura mater is a characteristic finding. Evacuation of the hematoma with thorough lavage of the interior of the limiting membrane is usually all that is required to effect a cure. If, as occasionally happens, the hematoma consists chiefly of clots and cannot, therefore, be removed through exploratory burr holes, an osteoplastic bone flap offers the only solution to the problem. It is impossible to overemphasize the fact that subdural hematoma is frequently bilateral and that the exploratory burr holes must be placed in both temporal regions whenever its presence is suspected.

Subdural Hygroma.—Subdural hygroma is presumably caused by a small tear in the arachnoid which, by a sort of ball valve action, permits cerebrospinal fluid to escape into the subdural space while preventing it from returning to the subarachnoid space. Restlessness, coughing, sneezing or convulsive movements of any sort will force fluid in relatively large quantities into the subdural space, even though the tear in the arachnoid may be very small.

The clinical symptoms of subdural hygroma are practically identical with those of subdural hematoma. Since the lesion may occur in all grades of head injuries, the symptoms vary from patient to patient. The development of a hygroma should always be suspected when an otherwise smooth convalescence is interrupted by signs of increasing intracranial pressure. The treatment is the same as that for chronic subdural hematoma, that is, burr hole exploration.

Persistent Cerebrospinal Fluid Rhinorrhea.—Rhinorrhea, as previously mentioned, occurs as a result of dural laceration associated with fracture of the skull through the anterior fossa. It is usually unilateral. When the patient tilts his head forward the nature of the condition is obvious, for clear fluid drips drop by drop from the nose. Adequate visualization of the anterior fossa by roentgenographic means is not easy, but the fracture can usually be demonstrated if stereoscopic views are made through the optic foramen.

Rhinorrhea following head injuries usually ceases spontaneously within seven to ten days. If it persists beyond this time, surgical intervention is indicated. The repair is accomplished through frontal osteoplastic flaps. If the fracture site can be lateralized, a small frontal bone flap is sufficient; otherwise, a bilateral flap is required. The anterior fossa should be explored extradurally until the fracture site is identified. It is frequently impossible, however, to demonstrate the dural laceration accurately, and even when it has been demonstrated it may be impossible to suture the tear without excessive damage to the frontal lobe. Fortunately, suture is not necessary. All that is usually required to effect a cure is to place a large graft of fascia lata, secured from the thigh, over the anterior fossa, so that the fracture is completely separated from the dural laceration. Sulfadiazine and penicillin should be given prophylactically, in large doses, before and after the operation.

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[8] Pudenz, R. H., and Shelden, C. H.: Lucite Calvarium—A Method for Direct Observation of the Brain: Cranial Trauma and Brain Movement, J. Neurosurg. 3: 487-505 (Nov.) 1946.

Tentorial Herniation.—Decerebrate rigidity, the result of a mass cerebral lesion which produces herniation of the tentorial brain stem, may occur whenever the intracranial tension above the tentorium is greater than the pressure below it. Such herniations are particularly likely to occur when the increase of pressure is rapid. They are frequent complications in extradural and subdural hematomas, intracerebral hemorrhage and cerebral edema.

Whatever the cause, tentorial herniation is a serious complication, the most effective treatment for which has never been fully established. When a mass lesion is present at operation and can be excised, pressure relationships are soon equalized and the herniation reduces itself spontaneously. A satisfactory method of management is yet to be agreed on for a mass lesion in one temporal or frontal lobe associated with unilateral cerebral swelling. Scheinker[9] suggested two corrective measures, ventricular puncture and slitting of the free edge of the tentorium, but the former of these procedures is of doubtful effectiveness, especially when the ventricle is small, and the latter is of such magnitude that it could scarcely be undertaken in the case of a desperately ill patient. Vincent, LeBeau and Guiot[10] reported that, in some of their cases, immediate improvement followed manual reduction of the uncal herniation through a temporal approach. The temporal lobe was gently elevated until the tentorial notch was reached, after which the herniated convolution was reduced manually and lifted upward and backward.

In our own opinion, the Botterell method[1] represents the most important contribution which has yet been made to the management of tentorial herniations. It is, in effect, internal decompression carried out by removal by suction of the pulpified brain in the temporal or frontal area, with the objective of discouraging cerebral swelling by the elimination of useless cerebral tissue. Since the approach is on the inferior and medial surface of the temporal lobe, there is practically no risk of sacrificing centers of vital cortical function. Botterell's method seems particularly logical because the areas of localized damage in the brain are so often associated with intracerebral accumulations of blood. His technic not only affords the most accessible approach to the intracerebral clots and permits removal of damaged brain tissue but also permits control of all bleeding vessels in the immediate vicinity.

Since the temporal lobes are most frequently involved in tentorial herniations, they should be investigated first. If intracranial tension is still high after the traumatized area has been adequately dealt with, the traumatized frontal pole should be similarly investigated.

Internal decompression by the Botterell method should be considered in all cases in which the patients show progressive deterioration from strangulation of the brain stem. The operation, however, is of such magnitude that it should not be attempted unless there are available all modern neurosurgical facilities to effect hemostasis.

SUMMARY AND CONCLUSIONS

The incidence of acute head injuries is so high that as a practical matter their treatment in most cases must be undertaken by physicians who are not trained neurosurgeons. This is a safe practice if the fundamental facts of diagnosis and treatment are clearly understood and if the circumstances are recognized under which the services of a specialist are required.

The diagnosis of acute head injuries is discussed with special reference to the prompt establishment of the so-called clinical base line, and the important considerations in treatment are outlined. Careful, unremitting observation is the basis of all therapy. Operation is not required in more than 1 of every 5 cases of acute head injuries, but it is essential that the decision for or against surgical intervention be made promptly, with full knowledge and evaluation of all the facts of the case.

The mortality in acute head injuries will be greatly reduced if the basic data set forth in this communication are generally appreciated. This is particularly true in respect to such complications as extradural hematoma, which now carries an almost incredibly high death rate because of diagnostic failure and delay in therapy.

ABSTRACT OF DISCUSSION

Dr. Barnes Woodhall, *Durham, N. C.:* Physiologists have learned a good deal in recent years about the reaction of the brain to acute injury. These studies have ranged from direct observation of the living brain under the lucite® calvarium to microsecond roentgen ray studies of the living brain penetrated by a gunshot wound. The task of the neurosurgeon is threefold: to apply results of these physiologic studies to the benefit of the individual patient; to delineate as accurately as possible those clinical conditions, like that of extradural hematoma, that are amenable to surgical treatment and to disseminate pertinent information concerning acute head injuries to physicians who must necessarily encounter and treat such patients as part of their emergency practice. Dr. Spurling has distilled into one manuscript his knowledge of acute head trauma derived from extensive civilian and military experience. I should like to point out that the existing problem of head injury goes far beyond that of a simple professional one and enters the domain of what might be termed preventive neurosurgery. In the past, surgical specialists have invaded this field to some degree. Based on ample physiologic evidence, Cairns developed a helmet for motorcyclists to safely decelerate the head in accidents. Loyal Davis devised a similar helmet for aviators. The late Dr. Dandy placed a metal plate in the caps of baseball players, and I believe that it was a surgeon who pointed out that a straight automobile handle was a formidable weapon when it struck the brain. Perhaps more can be accomplished in the field of industrial medicine, in which head injuries comprise 7 per cent of compensable injuries. According to an editorial in the May 28, 1949 issue of The Journal (p. 408), 100,000 accidental deaths occur yearly, with over half of these deaths occurring instantaneously or within twenty-four hours of injury. In children in the age groups from 4 to 14 years violent and accidental death represents the number one cause of mortality. Valid statistics do not exist that describe the influence of head injury in this tragic picture as they do, for instance, in the case of burns. However, it is valid to assume that since a high proportion of deaths are due to falls and motor vehicle-pedestrian accidents, damage to the brain is a significant factor. The first step in preventive neurosurgery as it relates to head trauma should therefore be a more accurate analysis than exists today of the forces and situations by and in which these injuries occur. Such a situational study in the case of children is now being conducted in my state, and it is planned to publish it in the near future.

Physiology of the Spinal Cord.—The contributions of Riddoch, Holmes and Head to the physiology of the spinal cord, which resulted from their meticulous study of the relatively few patients who survived following injury to the spinal cord in World War I, are unequaled in clinical observation.—Loyal Davis, M.D., *Surgery, Gynecology and Obstetrics,* July 1949.

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[9] Scheinker, I. M.: Neurosurgical Pathology, Springfield, Ill., Charles C Thomas, Publisher, 1948.

[10] Vincent, C.; LeBeau, J., and Guiot, G.: Brain Edema in Neurosurgery, Proc. Roy. Soc. Med. 40: 689-694 (Oct.) 1947.

TRIHEXYPHENIDYL

Evaluation of the New Agent in the Treatment of Parkinsonism

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This paper relates the experience of my colleagues and myself using the new antispasmodic compound trihexyphenidyl (artane,® 3-[1-piperidyl]-1-phenyl-1-cyclohexyl-1-propanol hydrochloride [1]) in the treatment of parkinsonism and several of the related disorders of movement. The trial of a new treatment of an old disease calls to mind a recent statement of A. C. Ivy,[2] who commented, "The physician practices medicine today, and because the response of different patients to the same therapy will always vary to some extent, the physician will always practice medicine on his patient. No physician can honestly guarantee that he will cure a disease or that his treatment will not cause undesirable symptoms or temporary discomfort."

Faced with the present lack of knowledge regarding the specific cause of parkinsonism, spasmodic torticollis, blepharospasm and other of the disabling disorders of movement, what should be the physician's therapeutic goal? In the belief that each of the diseases forming this group is organically derived in most instances, treatment is directed toward those symptoms which are most distressing and most common. These are generalized weakness with easy fatigability, muscular rigidity with cramps, soreness and aching, tremor and the loss of facility in dressing, eating, walking, talking and writing. Less troublesome subjectively, but noticed by associates, are the loss of facial expression and associated movements.

It is not known whether symptomatic improvement alters the course of the pathologic process underlying this group of diseases, but that would seem unlikely. However, the maintenance of morale that accompanies prolongation of symptomatic improvement probably postpones the time when these patients become hopelessly crippled and bedridden. Thus, if it is assumed that the time span of the degenerative process is reasonably predetermined in any individual case, the physician may suggest that purely emendatory therapy may lengthen the active life of the afflicted person while shortening the terminal dependent stage.

Regardless of the medicinal agent which the physician finds useful in parkinsonism, he should not forget to help the patient with the latter's emotional difficulties. This psychotherapy may mean nothing more than reassurance, sincere interest in solving the patient's problems and encouragement at the time of routine visits. Many of the patients need objective counseling regarding occupational adjustments as progressive disability necessitates curtailment of activities. The patient whose occupational duties cause severe nervous tension and accentuation of parkinsonian symptoms will do better if given less responsibility, often in a less public position.

Physical therapy should be used as needed and frequently is a useful adjuvant. Mild massage, heat and directed exercises, given once or twice weekly, may reduce muscle soreness and relax rigidity. Regular visits to the physiatrist afford continuity of therapeutic regimen and reenforce the physician's attempt to improve morale.

The practitioner who presumes to test a new drug, especially in parkinsonism, should maintain critical objectivity and avoid any suggestion that he is fostering the new product. One's natural desire to encourage chronically ill patients plus the tendency of these patients to grasp at any straw makes such objectivity difficult. The signs and symptoms of patients suffering from parkinsonism and the related disorders fluctuate with the patient's mood, with his general physical status, with exertion, with the environmental temperature and with his confidence (often sanguine expectation) regarding the physician. This variability of parkinsonian symptoms makes objective appraisal of the patient's condition, at any given moment, of little value. These difficulties have been considered by others [3] in testing new preparations in parkinsonism and have led to their conclusion that the estimation of the drug's effect on the carrying out of the routine daily "chores of life" by the patient and by relatives is a more reliable index of effectiveness than purely objective tests.

For the aforementioned reasons, no serious attempt was made to measure objectively the effect of medication on the patients, observations of whom formed the basis for this paper. Although the emotional tonic of a new remedy may temporarily improve parkinsonian symptoms, results are best evaluated in patients who have tried the standard correctives and who are observed while they are taking the trial preparation for several months or longer. Few of the patients of the series about to be described were local residents; thus it was necessary for us to depend on correspondence with the patient, his family and his home doctor. In many cases, however, both local and out of town patients have returned at regular intervals for reexamination, permitting firsthand observation. Although such personal visits usually added little other than a more lucid account of the patient's reactions to the drug, the examining physician at times noted increased ease in the patient's talking, walking and getting about generally. The type of evidence which has seemed to me to be of greatest value is that presented by the intelligent and cooperative patient who has had parkinsonism for many years and who has tried all of the standard remedies. If this patient experiments with trihexyphenidyl (artane®), diphenhydramine hydrochloride (benadryl hydrochloride®), amphetamine (benzedrine®), mixed atropine alkaloids (vinobel,® a tablet containing the alkaloids of belladonna root obtained by extracting with wine; rabellon® (a tablet containing alkaloids of belladonna, or Bulgarian belladonna) and other remedies, and finally, after a year's trial, tells me that trihexyphenidyl gives him equal or greater relief with fewer disagreeable side effects than does any of the other preparations, I accept this as evidence favoring this compound for this particular patient. Usually in such cases I have not been able to detect any appreciable change in the patient's physical status, although during the first few weeks that the patient receives the new antispasmodic, as is the case with other of the agents used for these disorders, one will note decided improve-

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From the Department of Neurology and Psychiatry, Mayo Clinic.

Read before the Section on Nervous and Mental Diseases at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

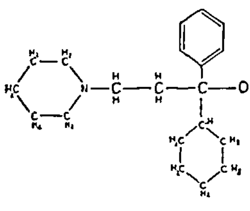
[1] Artane® is manufactured by Lederle Laboratories, Division American Cyanamid Company. The author had the cooperation of Dr. G. W. Clark and associates, of that company, during the trial of this compound.

[2] Ivy, A. C.: The History and Ethics of the Use of Human Subjects in Medical Experiments, Science (n. s.) **108**: 1-5 (July 2) 1948.

[3] Schwab, R. S., and Leigh, D.: Parpanit in the Treatment of Parkinson's Disease, J. A. M. A. **139**: 629-634 (March 5) 1949.

ment objectively in all of the patient's activities. Occasionally, much of this objective improvement is maintained for an indefinite period.

Trihexyphenidyl (artane,® or 3-[1-piperidyl]-1-phenyl-1-cyclohexyl-1-propanol hydrochloride) is a synthetic antispasmodic that has the following structural formula:



Chemical formula of trihexyphenidyl (artane,® or 3-[1-piperidyl]-1-phenyl-1-cyclohexyl-1-propanol hydrochloride).

Its experimental pharmacologic aspects have been reported on, and additional studies[4] are being made. No evidence of local irritation resulting from oral administration has been noted. The compound has some mydriatic activity and some antisialogogue action. It is antispasmodic on isolated intestinal strips and in dogs with isolated Thiry-Vella intestinal loops. This antispasmodic activity probably accounts for the occasional brief period of nausea which some patients note after each dose. No effect on blood pressure has been noted experimentally except when it is given intravenously to etherized dogs. In these animals there is slight depressor action. Experimental and clinical evidence suggests that excretion is fairly rapid, with no tendency toward accumulation in the body. Similar studies have revealed no evidence of damage to liver, kidneys or hemopoietic organs, nor has any evidence of damage to the reproductive organs appeared. In general, the reactions of the compound resemble those of atropine. The mode and the site of the action bringing about improvement in parkinsonian symptoms are unknown.

MATERIAL AND METHODS

Trihexyphenidyl has been administered by my colleagues and me to more than 150 patients for varying periods during the past eighteen months. One hundred and four of these patients have been observed adequately to justify inclusion in this report. Of the 35 females and 69 males in the group, 86 had parkinsonism. Of these 86, 17 gave a definite history of previous encephalitis, leaving 69 who had idiopathic parkinsonism. Because of the difficulty in differentiating with certainty between the so-called paralysis agitans or idiopathic parkinsonism and the arteriosclerotic type, and because of the uncertainty of some neuropathologists as to whether purely vascular lesions, per se, are responsible for the neuronal degeneration seen in many of the so-called arteriosclerotic group, no attempt has been made to separate and label the older group of patients in this series as arteriosclerotic. Nine patients had spasmodic torticollis, 4 had facial spasm, 1 had torsion spasm and 4 had indeterminate, non specific disorders of movement. In 2 of the 4 patients with facial spasm, the muscular spasms seemed to be limited to the eyelids (blepharospasm). Of the entire group, 31 patients had had symptoms relating to their chief complaint for two years or less, 26 for three to five years, 26 for six to ten years, 9 for eleven to twenty-five years, and the remaining patients had noted symptoms for more than twenty-five years.

Patients in this series varied in age from 12 to 78. Five were in the third decade of life, 8 in the fourth, 25 in the fifth, 33 in the sixth, 29 in the seventh and 3 were more than 70 years of age.

Twenty-two patients have received trihexyphenidyl for one to three months, 29 patients for four to six months, 32 for seven to nine months, 10 for ten to twelve months, and 11 for longer than twelve months. Of the entire group 60 had received one or more of the belladonna alkaloids previously.

With few exceptions the patients in this series were given complete general physical and neurologic examinations, including routine laboratory studies, prior to beginning the use of trihexyphenidyl. In 64 cases, complete blood counts and urinalyses were made after thirty or more days of this therapy. The patient was requested to send a detailed report of his condition at regular intervals, usually at the time he wrote for more of the compound. In many cases the family physician would send his estimation of the patient's condition with his report of the laboratory data. Often a review of the patient's condition was sent by a friend or a relative. In the analysis of results, the patients who continued to request additional trihexyphenidyl and who stated that they had been improved or that they preferred this to previous medication were classed as benefited. Such symptomatic relief varied considerably from patient to patient, and typical reports are given later in this paper.

The initial dose of trihexyphenidyl is 1 mg. four times a day, given before meals and at bedtime. After several days, when it becomes obvious that the patient is not sensitive to the drug and is not experiencing disagreeable side reactions, the dose is gradually increased, by 1 mg. per day, to 2 mg. four times a day. The average dose is 8 mg. a day.

An occasional patient will obtain sufficient benefit from a smaller dose, and a few patients are unable to tolerate more than 3 or 4 mg. a day. Many patients, however, and especially the patient with long-standing parkinsonism who has been taking large doses of scopolamine or stramonium, may take much more than 8 mg. per day. The largest dose was being taken by a patient with postencephalitic parkinsonism of eighteen years' duration; he tolerated eighteen 2 mg. tablets a day. Adjuvant medication will be mentioned later.

RESULTS

Of the entire group of 104 patients, 80 (77 per cent) have been sufficiently helped by trihexyphenidyl to wish to continue with it. Although certain of these patients did not notice any great change in parkinsonian symptoms while they were undergoing this medication as compared with previous medication, they often preferred the new antispasmodic because of the absence of or decrease in disagreeable side reactions. Fifty-three of this number have been taking the compound for longer than six months. Fifteen patients (14 per cent) did not notice sufficient alteration in their condition to justify continuing the use of trihexyphenidyl. Nine patients (9 per cent) preferred other medication or were made worse; of these 9 patients, 4 (4 per cent of the group of 104 patients) had severe toxic side reactions.

Of the group of 69 patients with idiopathic parkinsonism, 42 (61 per cent) were unaware of any disagreeable side reactions resulting from trihexyphenidyl. In this group 53 (77 per cent) were benefited by the drug, 9 (13 per cent) noticed no improvement or preferred other drugs, and 7 (10 per cent) were made worse. In 4 of the 7 who were made worse, trihexyphenidyl produced severe toxic reactions, which will be described later in this paper.

As to postencephalitic parkinsonism, 12 (71 per cent) of 17 patients appeared to be helped by trihexyphenidyl, 3 (18 per cent) were not benefited and 1 (6 per cent) was made worse. Nine (53 per cent) noted no unpleasant symptoms from the compound, per se.

Nine patients with spasmodic torticollis have been given trihexyphenidyl. Of these, 5 (56 per cent) have derived sufficient subjective relief to wish to continue use of the drug, 3 (33 per cent) noticed no help and

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[4] Cunningham, R. W., and others: The Pharmacology of 3-(N-Piperidyl)-1-Phenyl-1-Cyclohexyl-1-Propanol HCl (Artane) and Related Compounds; New Antispasmodic Agents, J. Pharmacol. & Exper. Therap. 96: 151 (June) 1949.

1 (11 per cent) was made worse. Most of this group have received the drug for three to six months, but one of these patients was the first to try it at the clinic and has taken it since December 1947. Although there was much to suggest a psychogenic basis for this patient's symptoms, she has appeared to obtain greater consistent relief from trihexyphenidyl than from any other form of treatment, including psychotherapy. Six (67 per cent) of these 9 patients noted no unpleasant symptoms as a result of the use of trihexyphenidyl.

Four patients with facial spasm, in 2 of whom the spasms appeared to be limited to the orbicularis oculi muscles, were given trihexyphenidyl. All of this group showed marked initial improvement, both subjectively and objectively; none of these patients has noticed disagreeable side reactions. Two showed marked improvement during the first three days of the new therapy but reverted to their premedication status when a placebo was substituted. Improvement was again noted when trihexyphenidyl therapy was resumed. Two have written that their initial improvement has decreased but that they wish to continue taking the drug. The other two patients in this group have discontinued its use because of a loss of its original effectiveness.

Trihexyphenidyl has been given to 4 patients with nonspecific disorders of movement. Tremor and choreoathetotic movements were present, presumably on a degenerative basis, but the symptoms could not be fitted into any of the recognizable syndromes. Each of these patients has continued to ask for the compound by letter and has maintained that it is of value in his condition although no objective evidence of significant improvement has been noted.

The 1 patient with torsion spasm has appeared to derive some benefit from trihexyphenidyl; her case history is summarized later.

Trihexyphenidyl appears to help primarily by relaxing rigid muscles. Patients state that they feel more "limber" and are able to move about more readily than previously. This improvement is usually manifested in dressing, eating, writing and in the performance of other daily tasks. Typical references to such benefit were: "I can now feed myself," "I wrote my first letter in several years," "I can get out of chairs much more quickly," "I am now dressing myself in half the time it used to take," and "I am now able to mix my own drinks." Objective evidence of decreased muscular tone is usually evident as improvement of gait, speech, writing, finger wiggle, toe tap and ability to get on and off the examination table. Approximately 75 per cent of this series noted a decrease of rigidity.

In over 50 per cent of our patients tremor was reduced by trihexyphenidyl. However, I know of no clue which will enable one to predict what effect it will have on this disturbance. It would seem to have least effect on senile tremors, and I would not recommend it for the senile group. In some patients who have shown marked rigidity, a latent tremor may appear more noticeable after trihexyphenidyl therapy is begun.

Trihexyphenidyl has less antisialogogic effect than drugs of the belladonna series. Thus only 11 per cent of this group complained of unpleasant dryness of the mouth with therapeutic doses. However, there is sufficient antisialogogic response to prove of help in cases of excessive salivation, and when this symptom is prominent, as in certain postencephalitic patients, additional antisialogogic effect may be desired and obtained by the adjuvant use of small doses of atropine.

Although an occasional patient will note a mild sedative effect with trihexyphenidyl, more commonly patients mention an excitatory response, with improvement in mental clarity. This stimulative reaction may be of sufficient magnitude to cause unpleasant nervousness or "jitteriness," as noted later. Most patients, however, appear to feel better when taking the new drug than when taking the belladonna alkaloids. This feeling of well-being is difficult to describe or analyze but has been mentioned sufficiently often by various patients to deserve comment.

Similar improvement was noted in the symptoms of parkinsonism by Doshay and Constable[5] after administering trihexyphenidyl to more than 200 patients.

TOXICITY AND SIDE REACTIONS

Trihexyphenidyl should be given in small doses initially and the dosage gradually increased until the patient obtains optimal benefit. If this procedure is employed, more than half of the patients will notice no side reactions. The drug need not be given to the point where toxic symptoms appear in order to obtain definite benefit, as is usually the case with the belladonna alkaloids. The disagreeable side reactions most commonly noted are dryness of the mouth (11 per cent), occasional sensation of nausea beginning about fifteen minutes after taking the drug and lasting for several minutes (11 per cent), sensation of lightheadedness felt for a few minutes early in the period of absorption of the drug (10 per cent), occasional sensation of "jitteriness" (6 per cent) and occasional blurring of vision (6 per cent). Other symptoms which individual patients have noted and attributed to the drug are tinnitus, tightness in the head, increase in tremor and soreness of the mouth. In addition, several patients have noted a mild diuresis as a result of taking the drug.

In 4 patients the toxic effects were serious enough to require immediate discontinuance of the use of trihexyphenidyl. Two of these patients experienced acute confusional reactions with delirium. Their mental confusion disappeared immediately after the drug was withdrawn. The third patient became extremely nervous and agitated until the drug was stopped. The fourth patient experienced acute "dizziness" with nausea and vomiting. Thus, nearly 4 per cent of the patients were unable to take the drug because of undue sensitivity. Occasionally, I have found it possible to overcome what appeared to be specific sensitivity by restarting the use of trihexyphenidyl in a smaller dose and increasing very slowly until clinical improvement appeared.

A total of 64 patients have had one or more complete blood counts and urinalyses made on one or more occasions thirty days or longer after beginning the use of trihexyphenidyl. In no instance was an alteration shown in the blood count or abnormality in the results of urinalysis attributable to the drug. At the moment, therefore, there is no evidence that this compound has seriously damaged the blood-producing organs or the kidneys in this group of patients. However, inasmuch as it may be administered to individual patients for a period of five years or longer, only additional observation will make it possible to determine definitely whether there are serious side effects. A number of patients have discontinued the use of the drug, temporarily or permanently, after having taken it for one month or longer, without noting any evidence of addiction or habituation.

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[5] Doshay, L. J., and Constable, Kate: Artane Therapy for Parkinsonism: A Preliminary Study of Results in One Hundred and Seventeen Cases, J. A. M. A. **140:** 1317-1322 (Aug. 27) 1949.

Canelis, Farnell and McGavack[6] have carried out periodic determinations of blood sugar, creatinine and urea nitrogen, as well as liver function tests, complete blood counts and urinalyses, on 15 patients who had been treated with trihexyphenidyl for six months or longer. In no instances were there significant changes in the results of any of these tests.

As noted previously, trihexyphenidyl may produce a feeling of "jitteriness" or "nervousness." This may be counteracted by giving phenobarbital in doses of ¼ to ½ grain (0.016 to 0.032 Gm.) three times a day.

Many of the patients with long-standing parkinsonism stress the absence or the decrease of disagreeable reactions due to taking trihexyphenidyl, in contrast to what they have noted with the belladonna group of drugs. One may see little change in tremor or rigidity when the shift is made from scopolamine to trihexyphenidyl, but patients may, nevertheless, prefer the new drug because they have noted an improvement in vision, salivation and bowel habits.

In general, when patients have been taking amphetamine or a similar compound with a belladonna alkaloid, I suggest that they continue with the stimulant when the change is made to trihexyphenidyl. Several patients, after trying the new drug for a month or two, have added small doses of atropine or scopolamine to it and have found the combination more satisfactory than either alone. Usually, however, trihexyphenidyl by itself has appeared to be equally satisfactory.

As is true with the other antispasmodics employed against parkinsonism, patients note a lessening of symptomatic relief with continued use of trihexyphenidyl. A part of this decrease of effectiveness is attributable to the patient's expectation of continued improvement, rather than the acceptance of mere alleviation of symptoms. To what extent true tolerance develops is difficult to say at this time. When the effectiveness of the drug has appeared to wane, I have occasionally tried switching to the previously used drugs for a period of a month or longer, with the usual result that the patient will request a return to trihexyphenidyl.

Cases are now briefly reported, to illustrate the type of response to trihexyphenidyl noted by patients in the previously mentioned categories. Several cases illustrate undue sensitivity to, or toxicity of, trihexyphenidyl (artane®).

REPORT OF CASES

CASE 1.—Parkinsonism began in a 42 year old Negro teacher in 1943 and 1944 with weakness and stiffness of his right hand. There was gradual appearance of tremor, sialorrhea, facial immobility and propulsive gait. Belladonna alkaloids (rabellon®) were administered. On June 18, 1948 the patient exhibited extreme slowness of all movements, cogwheel rigidity, festination and tremor. Treatment with trihexyphenidyl was begun, 5 mg. being given three times a day. The next day mild toxic delirium, confusion and irrational speech were noted. The use of the compound was stopped, and the mental state was satisfactory sixteen hours later. There was definite reduction in rigidity. On June 21 the patient restarted the use of the drug with a dose of 2.5 mg., three times a day, without evidence of toxicity. On July 22 he wrote that he was improved and requested more of the drug. On August 30 the patient's home physician reported complete blood counts and the results of urinalysis as normal. The patient reported a decrease of tremor and stiffness and stated that he could walk, eat, talk and write better, and could dress himself and drive his car, which he could not do prior to the use of trihexyphenidyl. He had some dryness of the mouth and blurring of vision. His back was straighter, and he held his head up better. From Sept. 30, 1948 to April 10, 1949 he submitted monthly reports, with requests for additional trihexyphenidyl. The improvement was maintained.

CASE 2.—A car dealer aged 63 years noticed the onset of tremor and muscular rigidity in 1946. On March 16, 1948 examination revealed coarse tremor of all four extremities when the patient was at rest. There were loss of associated movements, loss of facial expression and increase of muscle tonus with a suggestion of the cogwheel phenomenon. Administration of 2 mg. of trihexyphenidyl three times a day was started. By April 21 the patient could get out of his chair more easily, and there was some decrease in rigidity but not much change in tremor. On September 21 the patient and his home physician estimated that tremor had been reduced about 25 per cent by the use of trihexyphenidyl. The patient noticed that he got in and out of a car more easily when he was taking this drug. He had some dryness of the mouth. The home physician reported that complete blood counts and the results of urinalysis were normal; he stated that the patient's condition was improved. On March 28, 1949, a review of monthly reports indicated that the initial improvement had been maintained and that there had been no serious untoward side effects.

CASE 3.—An artist 62 years old began to have weakness of the fingers of his right hand in 1942. By 1944 there were tremor and stiffness of both hands. By 1946 he had loss of facial expression, difficulty in speaking and sialorrhea. He was treated with scopolamine and mixed belladonna alkaloids. Typical parkinsonism was evident on Sept. 3, 1948, when he began taking trihexyphenidyl at the rate of 2 mg. four times a day. On October 8 a letter from the son, who is a physician, said that the patient had experienced general improvement in all symptoms, was more cheerful and was again attempting portrait painting. There was no change in tremor, but there was improvement in gait, voice and ability to feed himself. He no longer shirked dinner invitations, and there were no unpleasant side effects. Complete blood counts and the results of urinalysis were satisfactory. A letter from the son on Feb. 20, 1949 stated that the improvement had been maintained and that no toxic side reactions had occurred. Laboratory studies gave normal results.

CASE 4.—A 46 year old man had acute encephalitis in 1927. In 1941 the onset of tremor of the left leg, which spread to other extremities, and the onset of oculogyric crises were noted. On Aug. 11, 1948 examination disclosed typical parkinsonian tremor, rigidity and gait. His previous treatment had consisted of the use of stramonium from 1936 to 1946 and mixed belladonna alkaloids, 4 mg. a day, from 1946 to Aug. 11, 1948, when he began taking 2 mg. of trihexyphenidyl four times a day. On August 23 the dosage of this drug was increased to 3 mg. five times a day. Improvement was noted in walking, sleeping and reading. Oculogyric attacks decreased in frequency and severity. On October 20 it was observed that a decrease of tremor had occurred. The patient continued to maintain improvement in walking and could dress himself "twice as quickly." He wrote "his first letter in ten years." By Jan. 8, 1949 he had gained 14 pounds (6.4 Kg.) since he began taking trihexyphenidyl, and improvement had been maintained. Information received on April 12, 1949 indicated that improvement had been further maintained.

CASE 5.—In January 1947 a woman aged 43 years felt overworked, tired, nervous and depressed. In June 1947 she had uncontrollable turning of the head to the left. In December 1947 examination disclosed spasmodic torticollis, with hypertrophy of the right sternocleidomastoid muscle. All cervical muscles showed some increase of tone, and there was a suggestion of tremor of the right leg. On psychiatric evaluation she was thought to have a mixed psychoneurosis. On the twenty-ninth of that month she began taking trihexyphenidyl, 1 mg., five times a day. On March 5, 1948 she stated that the drug relaxed the spasms of her neck and that the effect of 1 tablet (1 mg.) lasted about four hours. No toxic symptoms were noted. By May 24 she was taking 5 to 6 mg. of the drug daily, and there was subjective as well as objective improvement in the "pulling and jerking" of her neck. Occasional blurring of vision was noted. On September 27 she was still taking trihexyphenidyl, had no disagreeable side reactions and thought that she was still being benefited. She was able to teach school. A report on April 4, 1949 indicated that she was under considerable tension in her teaching position with the end of the school year approaching. Symptoms of torticollis were becoming worse. She insisted that she was better when receiving trihexyphenidyl, however. A letter on May 12 requested more of the compound and suggested improvement as compared with her condition in April.

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[6] Canelis, M.; Farnell, F. J., and McGavack, T. H.: Clinical Experiences in Parkinsonism with a New Type of Antispasmodic, to be published.

CASE 6.—A 33 year old secretary first noted in 1945 that her right arm tended to pull across the front of the body when she was writing. She had to change jobs. In 1946 she stopped eating with her right hand because it would pull to the left. She noted "twitching" of the muscles of the right shoulder. In October 1948 she had pain in the right shoulder and dull achings which were worse when she attempted to use her right arm. In January 1949 there was subjective weakness of the right shoulder muscles. On January 11 examination disclosed dystonic movements of the right shoulder and arm muscles. Treatment consisted of physical therapy and the use of trihexyphenidyl, 2 mg., four times a day. On January 19 subjective improvement was apparent. She was able to sleep, eat and work more comfortably. On February 16 improvement had been maintained and she could raise her arm higher than previously. On March 29 her condition appeared to be about the same as on February 16. She was then taking 2 mg. of trihexyphenidyl five times a day and had experienced no unpleasant side reactions.

CASE 7.—A 66 year old retired teacher began to have tremor of her right arm and hand in 1946. She was given scopolamine and stramonium. On Aug. 19, 1948 she had a pill-rolling tremor of the right arm and leg and some increase of tonus of the right extremities. A diagnosis of parkinsonism was made. She began taking 1 mg. of trihexyphenidyl three times a day and was told to increase the dose gradually, so that on September 2 she was taking 2 mg. four times a day. On the last-mentioned date she was extremely tired, had a headache, was agitated, was perspiring freely and was extremely nervous. The next day use of the drug was discontinued, and two days later she had completely recovered from the acute toxic reaction.

SUMMARY AND CONCLUSIONS

The new synthetic antispasmodic compound, trihexyphenidyl (artane,® 3-[1-piperidyl]-1-phenyl-1-cyclohexyl-1-propanol hydrochloride), has been given to 104 patients suffering from parkinsonism, spasmodic torticollis, facial spasm and miscellaneous dyskinesias. More than half of these patients have received the drug for longer than six months. The majority of the patients of each of these groups appeared to derive sufficient subjective benefit from the treatment to justify its continuance. Disagreeable side reactions were usually avoided when small initial doses of the compound were administered and gradually increased until optimal benefit was obtained. Unpleasant effects noticed occasionally by 41 patients were, in the order of frequency, dry mouth, nausea, "giddiness," blurring of vision, nervousness or "jitteriness," tinnitus, "tightness in the head" and soreness of the mouth. Four patients have manifested severe and immediate toxic reactions, namely, mental confusion, dizziness with nausea, and marked agitation.

The chief virtue of trihexyphenidyl appears to be its ability to provide symptomatic relief comparable to or greater than that afforded by the usual belladonna alkaloids while causing fewer disagreeable side reactions. Thus far, no alterations have been noted in blood counts or in the results of urinalysis which could be attributed to the administration of trihexyphenidyl.

It is emphasized that the foregoing observations are based largely on subjective data and that current impressions may have to be modified when further information is available.

ABSTRACT OF DISCUSSION

DR. PETER G. DENKER, New York: For the past year my associates and I have been experimenting with the use of various drugs on the neurologic wards at Bellevue Hospital, in the hope of evaluating their efficacy in parkinsonian states. We have thus far had experience in about 50 cases, but unfortunately artane,® being one of the most recent we have used, has been tried in only 18 cases. In these 18 cases, however, I am glad to confirm the general impressions of its value as outlined by Dr. Corbin. We found 11 of the 18 patients to be definitely improved. Our average dose was 8 mg. daily. Two patients could not tolerate the drug, chiefly because of dizziness and gastrointestinal symptoms. In 5 cases no significant improvement was noted. As to our results with the other drugs tried, with scopolamine 30 of 50 patients were improved and with diphenhydramine (benadryl®) 39 to 55 were similarly greatly helped. Tripelennamine (pyribenzamine®) and methapyrilene (histadyl®), two other antihistaminic drugs, did not give favorable results, indicating there is something else in the tripelennamine medication responsible for its therapeutic usefulness other than its antihistaminic effect. Thephorin® (2-methyl-9-phenyl-2,3,4,9-tetrahydro-1-pyridindene hydrogen tartrate) alone was not of great value, but this compound and scopolamine administered in combination were distinctly effective, more so than either drug alone, beneficial results being obtained in 7 of 13 cases. This figure is even more significant because of the fact that each of these drugs when used separately in these cases did not produce adequate responses. Lastly, we tried tolserol® (3-ortho-toloxy-1,2-propanediol) in 24 cases, but our results were unfavorable, only 4 of the 24 patients being improved, and there was a very high toxic reaction when the drug was administered orally. We are glad to confirm the findings of Dr. Corbin in the use of trihexyphenidyl in Parkinson's disease. We feel this drug is of distinct value, although not by any means the final answer in the treatment of Parkinson's disease.

DR. ROLAND P. MACKAY, Chicago: Because of the unsatisfactory nature of all known methods of treatment of parkinsonism, one grasps anything new with eagerness. I have had no personal experience with trihexyphenidyl. I have been disappointed with the other newer drugs suggested for parkinsonism. As regards diphenhydramine, I have not found that it helped any patient of mine at all. The same applies to tripelennamine. Parpanit® (diethylaminoethyl-1-phenylcyclopentane-1-carboxylate hydrochloride), likewise, is as good as nothing, in my experience, as is tolserol.® Apparently the chief value which trihexyphenidyl has, from the studies of Dr. Corbin, is in the scarcity of unpleasant side effects. To date, scopolamine is far superior to every other drug used in this condition, perhaps with the exception of trihexyphenidyl, but, unfortunately, about 10 per cent of patients do not tolerate scopolamine, because of unbearable dryness of the mouth, or dilatation of the pupils, with difficulty in reading, or confusional states, or even a psychosis. Some patients taking scopolamine cannot sleep at night because of nightmares. If trihexyphenidyl will give as good results as scopolamine and will not produce these unpleasant side effects, it will be a great contribution. Our best plan in cases of parkinsonism will undoubtedly be, in the future as in the past, to treat with a combination of drugs. We will probably find that, as has been true with the drugs heretofore at our disposal, we shall wish to combine trihexyphenidyl with scopolamine, or with some of the other belladonna drugs, or with amphetamine.

Dr. Kendall B. Corbin, Rochester, Minn.: I agree entirely with what Dr. Denker and Dr. Mackay said. Trihexyphenidyl is one more palliative drug in the treatment of these movement disorders, and I am sure that other products will also prove helpful. One has to try several drugs and individualize the therapy in each case of parkinsonism. I did not have time to stress the importance of psychotherapy, such as reassurance, helping the patient with his occupational problems, and so on. These patients also benefit tremendously, I feel, from physical therapy. These are all an important part of the treatment. We, also, have had no success with tolserol.® Parpanit® has been given to 20 patients, but we have felt that trihexyphenidyl was more effective. Diphenhydramine has occasionally seemed to be the drug of preference in early cases of parkinsonism, in which the symptoms are of a minor nature and the patient does not wish to be bothered by the side reactions of the stronger antispasmodics. Regarding facial spasm, I should like to say again that the improvement was only brief. It lasted for two or three weeks and gradually lessened. If we could learn what causes that initial improvement—and I say again that I do not think it is due to emotional influence—and then do something to maintain it, we might really be able to help these unfortunate patients.

MERCURIAL DIURETICS AND ACUTE URINARY RETENTION

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The treatment of congestive heart failure has undergone important changes in recent years. From an era in which prolonged rest, digitalization and severe fluid restriction constituted the basis of therapy we have passed to a phase in which the key objective is increased renal excretion of water. Thus overt edema and occult edema (as in pulmonary congestion) are treated by a salt-poor regimen, liberal fluid intake and organic mercurial agents (as well as digitalis and oxygen).

The considerably increased use of mercurial compounds in congestive heart failure has added greatly to the efficacy of treatment, with resulting decrease of morbidity and mortality.

As with other therapeutic agents of demonstrated potency, the administration of mercurial diuretics sometimes occasions unpleasant and even serious consequences. The fact that sudden death following intravenous injection of these drugs has been reported by several observers [1] has led to use of the apparently safer intramuscular route of administration.[2] Not uncommonly, severe leg cramps result from excessive loss of sodium and water. This distressing, though not serious, symptom may be effectively countered by oral administration of common salt and may be avoided in subsequent treatment of the subject by smaller doses of the mercurial agent.

The syndrome of salt depletion induced by a regimen of sodium restriction and sodium diuresis (mercurial injections) has recently been reemphasized by Soloff and Zatuchni.[3] Four fatalities were reported, each preceded by nitrogen retention. That there is a risk of uremia from sodium depletion, especially in patients with renal damage, seems indicated by the case reports of MacGuire.[4] Favorable effect on such uremia is achieved by administration of sodium chloride. Symptoms of a serious nature, entirely attributable to the extrarenal factors of disturbed water and electrolyte balance resulting from profuse and rapid diuresis, rather than from inherent toxicity of mercurial diuretics, have been described by De Graff and Nadler,[1b] Poll and Stern [5] and Hines.[6]

Other adverse effects which have been noted in patients receiving organic mercurial drugs [1b] are: digitalis toxicity during treatment with digitalis; manifestations of idiosyncrasy; mercurial poisoning (less common with the rapidly excreted theophylline-containing compounds); cutaneous eruptions; chills and fever, and shocklike reactions, in which individual susceptibility to a particular mercurial compound may be the significant factor.

Mercurial diuretic agents have assumed such an important role in the treatment of congestive heart failure that the relatively small number of adverse sequelae incident to their administration by no means contraindicates their widespread use. It is nevertheless important for the clinician to explore all possible effects of these agents, favorable and unfavorable, the more intelligently to handle patients in need of treatment. With this consideration in mind we wish to report briefly 5 illustrative cases (from 8 on which we have data) in which acute urinary retention resulted from the use of mercurial agents.

As in the syndrome of salt depletion, sudden and profuse diuresis, and not the toxic effect of the drug, was the provocative factor. We have been impressed with the frequency with which middle-aged and elderly men, with manifest or unrecognized prostatic disorders, have been thrust into acute urinary retention by administration of mercurial drugs. Often, unnecessarily large doses of mercurial compounds have been administered. In 3 instances emergency surgical intervention became necessary. In the comment following the case reports we shall discuss the hydrodynamics involved and shall offer suggestions designed to prevent this complication.

REPORT OF CASES

Case 1.—B. F., a white man aged 76, was known to have had arteriosclerotic and coronary arterial heart disease for at least ten years. For approximately fifteen years he had had slight diurnal frequency and nocturia (two to three times), but no dysuria. He had never sought medical advice for bladder symptoms. On Jan. 10, 1948 he had a moderately severe attack of nocturnal dyspnea of one hour's duration. With the spontaneous subsidence of this seizure, he fell asleep. The next morning he consulted his physician. Digitalis, salt-poor diet, liberal fluid intake and limited physical activity

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From Lebanon Hospital.

[1] (*a*) Barker, M. H.; Lindberg, H. A., and Thomas, M. E.: Sudden Death and Mercurial Diuretics, J. A. M. A. **119:** 1001 (July 25) 1942. Brown, G.; Friedfeld, L.; Modell, W., and Sussman, R.: Deaths Immediately Following the Intravenous Administration of Mercupurin, ibid. **119:** 1004 (July 25) 1942. (*b*) De Graff, A. C., and Nadler, J. E.: A Review of the Toxic Manifestations of Mercurial Diuretics in Man, ibid. **119:** 1006 (July 25) 1942. (*c*) Volini, I. F.; Levitt, R. O., and Martin, R.: Studies on Mercurial Diuresis: Sudden Death Following Intravenous Injection; Report of Three Cases, with Electrocardiographic Studies in Two, ibid. **128:** 12 (May 5) 1945.

[2] Gold, H., and others: A System for the Routine Treatment of the Failing Heart, Am. J. Med. **3:** 663 (Dec.) 1947.

[3] Soloff, L. A., and Zatuchni, J.: Syndrome of Salt Depletion, J. A. M. A. **139:** 1136 (April 23) 1949.

[4] MacGuire, W. B.: Uremia Due to Sodium Depletion, J. A. M. A. **137:** 1377 (Aug. 14) 1948.

[5] Poll, D., and Stern, J. E.: Untoward Effects of Diuresis, with Special Reference to Mercurial Diuretics, Arch. Int. Med. **58:** 1087 (Dec.) 1936.

[6] Hines, L. E.: The Effect of Diuresis by Mercurials, J. A. M. A. **110:** 202 (Jan. 15) 1938.

were prescribed. At 10 a. m. 1.5 cc. of meralluride sodium solution was administered intramuscularly. At 11 p. m. of the same day the physician was hurriedly summoned to the home of the patient, who had acute urinary retention associated with severe lower abdominal pain and distressing tenesmus of the bladder. Having voided small amounts of urine with unaccustomed frequency until 2 p. m., the patient had been unable to void thenceforth. Digital examination of the rectum revealed a decidedly enlarged, uniform and moderately firm prostate. By urethral catheterization 500 cc. of urine was withdrawn, an appreciable residue being permitted to remain in the bladder. Until the morning of January 13 the patient was not able to void spontaneously, requiring cateterization twice daily. From January 13 to 18 there was gradual regression of bladder discomfort, less frequent urination and finally the resumption of the patient's normal bladder status. Further mercurial therapy was refused, even though the physician proposed much smaller doses than originally administered. Subsequent treatment consisted of a stringent salt-poor diet, digitalis, liberal intake of fluid and restricted physical activities. There has been no exacerbation of bladder symptoms.

CASE 2.—S. J., a white man aged 55, was known to have had rheumatic heart disease for many years. For several years he had had slight diurnal frequency and nocturia (twice) but no dysuria. On July 10, 1947 examination disclosed mitral stenosis, aortic insufficiency, auricular fibrillation and moderately severe failure of both sides of the heart. One cubic centimeter of meralluride sodium solution was administered intramuscularly, and the patient was placed on a regimen of digitalis, a salt-poor diet and ample fluids. Within several hours after the mercurial injection the patient experienced pronounced urgency and unaccustomed frequency of urination. Eighteen hours later he required emergency treatment at his home for acute urinary retention with a decidedly distended bladder. Digital examination of the rectum revealed minimal enlargement of the prostate. A urethral catheter was easily passed into the bladder, and 500 cc. of urine was withdrawn. After this there were no further unusual bladder symptoms. There was no retention or dysuria, and the patient continued with normal bladder status.

CASE 3.—J. G., a white man aged 65, had arteriosclerotic heart disease, auricular fibrillation and increasing congestive heart failure. There were bladder difficulties of approximately one year's duration, consisting of frequency of urination (every hour), dribbling and nocturia (three to four times). On Oct. 16, 1947 his physician administered 1 cc. of mercurophylline injection intravenously. Within a few hours the patient's discomfort due to his bladder had increased decidedly; he became unable to void, and he was catheterized at home. Digital examination of the rectum revealed that the prostate was slightly enlarged, semifirm, smooth and not tender. Catheterization was performed at least twice daily until October 23, when an indwelling catheter was permitted to remain in situ. On October 25 this catheter was removed, and again complete urinary retention ensued. At this juncture, because of ascending infection of the urinary tract, urologic consultation was requested and an emergency suprapubic cystostomy was performed by one of us (H. B.). Second stage prostatectomy was delayed because of the patient's poor cardiac status. On December 10 second stage prostatectomy was performed, from which the patient recovered uneventfully. Continued treatment of congestive heart failure consisted of mercurial injections, digitalis, salt-poor diet, ample fluids and limited physical activities, with satisfactory result.

CASE 4.—W. B., a white man aged 65, had arteriosclerotic heart disease and congestive heart failure. For a period of five years he had had vesical symptoms, consisting of difficulty in starting the urinary stream, micturition every two hours and nocturia (three times). On Nov. 25, 1947 his physician administered 1.5 cc. of meralluride sodium solution intramuscularly. Shortly after the injection the patient's bladder symptoms became decidedly aggravated, and acute urinary retention ensued. Twenty-four hours after the mercurial injection, with the patient at home, the physician attempted to pass a urethral catheter, but was unsuccessful. A urologist was likewise unsuccessful in his attempt to insert a catheter into the extremely distended bladder. Digital examination of the rectum revealed that the prostate was decidedly enlarged, firm, smooth and slightly tender, with the median sulcus obliterated. The patient was hospitalized, and a suprapubic cystostomy was performed. On December 8 second stage prostatectomy was performed; the patient's postoperative course was uneventful. Further treatment of congestive heart failure consisted of frequent mercurial injections, salt-poor diet, ample fluids and digitalis. The patient was discharged to his home on Jan. 1, 1948, where medical treatment was continued.

CASE 5.—L. K., a white man aged 69, consulted his physician on Nov. 10, 1948. He had had arteriosclerotic heart disease for at least ten years and had had increasing dyspnea on mild effort for the past year. Several moderately severe episodes of nocturnal dyspnea had occurred. For two years there had been slight diurnal frequency and nocturia (twice) but no dysuria. The patient had never sought medical advice for bladder symptoms. On November 10 the patient's physician administered 1 cc. of meralluride sodium solution intramuscularly. The ensuing diuresis was considered satisfactory. Thereafter, 2 cc. of meralluride sodium solution was administered every three days. Because of increasing bladder discomfort, chiefly urgency and burning on urination, administration of the mercurial agents was discontinued after the fourth injection. Bladder symptoms promptly subsided. On March 17, 1949, because of increasing symptoms of congestive heart failure, 2 cc. of meralluride sodium solution was again administered. Again there were decided bladder symptoms, which, however, subsided in three days. On March 24 the physician again administered a mercurial agent, mercurophylline injection, in a dose of 1 cc. Eight hours later catheterization became necessary for acute urinary retention. Because of pronounced bladder discomfort, continued frequency and urgency of urination, and a large volume of residual urine, the patient was admitted to the hospital on March 31. Digital examination of the rectum disclosed a decidedly enlarged prostate of uniform consistency. On April 7 suprapubic cystostomy was performed. Second stage prostatectomy had to be delayed because of profuse hemorrhage from a duodenal ulcer. Further administration of mercurial agents following the suprapubic cystostomy of April 7 resulted in satisfactory diuresis without discomfort to the patient.

COMMENT

A large proportion of the patients treated for congestive heart failure are middle-aged or elderly men. Not a few men of this age distribution have bladder symptoms, the result of varying degrees of obstruction of the bladder outlet, occasioned by prostatic enlargement. Most of these men accept the symptoms of slowed stream, slight diurnal frequency and some nocturia as inevitable concomitants of the aging process; therefore, they have not sought medical aid for this condition. In the absence of further increase in obstruction, infection of the urinary tract, bladder calculi, malignant growth of the prostate or bladder or advanced debility, such patients are likely to get along with relative control of the bladder indefinitely.

In these patients the bladder-emptying mechanism may be regarded as insufficient, but in a state of compensated insufficiency. Doubtless hypertrophy of the bladder muscle contributes to this, much as does hypertrophy of the cardiac muscle in valvular and other types of heart disease. Profuse diuresis, whatever its origin, with consequent distention of the bladder, proves sufficient to overcome the bladder's motor function; continuing accumulation of urine and bladder distention lead to further asthenia of the bladder wall. The clinical picture of acute urinary retention ensues, with its additional threat to the patient in cardiac failure. In other instances, with an increase in the volume of residual urine, the bladder symptoms are aggravated without the development of complete urinary retention. In the large majority of patients, it is granted, there are no symptoms referable to the mechanism under discussion.

Tscherning[7] has stated the belief that men in whom acute urinary retention develops after mercurial injections are those with a hypertrophied prostate in whom additional, acute swelling accounts for complete obstruction of the bladder. The rapidity with which acute retention developed in a number of our cases shortly after the increased renal excretion of urine inclines us to the view that sudden distention of the bladder is the more important factor. We are not aware of any mechanism or data which suggest that prostatic edema results from the administration of mercurial agents.

Plotz[8] reported 3 cases of acute urinary retention following the injection of mercurial compounds in patients with congestive heart failure. These patients had all received opiates, and Plotz suggested that sedation probably diminished sensory reflexes from the distending bladder wall sufficiently to enhance the possibility of acute retention. In our cases there was no such sedation; hence, this explanation does not hold true in our experience.

It has become our practice to attempt to evaluate the bladder status of all middle-aged and elderly men in need of treatment for congestive heart failure. Careful inquiry to elicit the presence of bladder symptoms is most important. Without specific questioning the patient often fails to mention these symptoms, in the belief that they are normal or unimportant.

In patients whose bladder symptoms are severe and in those whose symptoms, while seemingly mild, are associated with a significant volume of residual urine (over 2 ounces, or 59 cc.), we prefer to avoid the use of mercurial compounds and to rely instead on a salt-poor diet. We have never observed bladder symptoms as the result of such a regimen. In an urgent situation, when mercurial agents must be administered to such poor "bladder risks," we begin with small doses of meralluride sodium solution, 0.1 or 0.2 cc., increasing the dose in daily injections and taking careful note of the response of the bladder. This practice, we believe, will help to eliminate the complication of exacerbated bladder symptoms or acute urinary retention in the mercurial treatment of middle-aged and elderly men.

SUMMARY

1. Attention is called to the importance of evaluating the vesical status of middle-aged and elderly men for whom mercurial diuretic treatment is contemplated.
2. Five cases are reported in which acute urinary retention followed the intramuscular administration of mercurial compounds.
3. Several methods are suggested for avoiding this complication in middle-aged and elderly men undergoing treatment for congestive heart failure.

840 Grand Concourse (51)—1749 Grand Concourse.

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[7] Tscherning, R.: Ueber Salyrgan, Deutsche med. Wchnschr. 53: 1465 (Aug. 26) 1927.

[8] Plotz, M.: Acute Urinary Retention Following the Use of Mercurials in Heart Disease, Urol. & Cutan. Rev. 47: 286 (May) 1943.

LYE BURNS OF THE ESOPHAGUS

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The problem of choosing a method of treatment for a boy with multiple strictures of the esophagus due to swallowing lye[1] prompted us to survey our previous cases and to analyze our experiences with them. Since 1926 there have been 39 lye-burned patients admitted to the St. Louis Children's Hospital. Their ages have ranged from 6 months to 7 years, but 69 per cent of them have been between 1 and 3 years. Thirty-three of the patients were observed during the past ten years, with only 6 in the previous twelve years.

Eleven of the children were seen at the St. Louis Children's Hospital within forty-eight hours after their accidents occurred, and 28 not until strictures had developed. All of the patients had initial anorexia with increased salivation while the burns of the mouth were present. In most of them swallowing at first improved, but in those in whom strictures later developed the early improvement was followed by increasing dysphagia, first for solids and then for liquids. There was usually a history of vomiting immediately after small amounts of food were taken rather than of refusal of the child to swallow.

There were only two deaths in our series. One child whose esophagus had been perforated by an esophagoscope in 1934 died from mediastinitis, and another died from measles and pneumonia in 1933.

Although strictures are more likely to occur after ingestion of dissolved lye (84 per cent of those who drank a solution), an appreciable percentage (64 per cent) of those who took solid lye subsequently suffered from strictures. Three children who ate drano® had severe burns of the mouth, but for some unknown reason strictures developed in none of these. There is no absolutely reliable method of predicting whether or not a stricture will form after a child has taken lye into his mouth.

In judging the minimal length of time prophylactic therapy should be carried out, one may be guided somewhat by table 1, which shows the intervals of time between the ingestion of lye and severe dysphagia.

The location of the stricture is of interest, especially when one considers the possibility of treating these patients surgically (table 2).

In localizing the stricture, the barium sulfate swallow may be misleading unless a thick barium sulfate preparation is used. A stricture may be missed entirely in the fluoroscopic or roentgenologic examination of a frightened child if a thin barium sulfate preparation is used. On the other hand, the delay obtained with a thick preparation and the dilatation of the esophagus produced above the stricture make visualization much easier. Esophagoscopy is the most reliable method of localizing strictures and determining whether or not the scar tissue entirely surrounds the esophagus.

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Dr. A. F. Hartmann, professor of pediatrics, and Dr. T. E. Walsh, professor of otolaryngology, contributed constructive criticism in the preparation of this article.

[1] Conference at the St. Louis Children's Hospital, July 30, 1948, J. Pediat. 33: 630 (Nov.) 1948.

TREATMENT

Four methods have been used in the treatment of these patients, namely:

1. Early prophylactic dilation with mercury-filled rubber bougies.
2. Dilation from above under direct vision after stricture has occurred.
3. Gastrostomy with retrograde dilation.
4. Surgical repair of the esophagus.

1. *Early Prophylactic Dilation.*—Of the 11 patients seen by us within forty-eight hours of the burn, only 3 had strictures. (See table 3.) One was the first patient, seen in 1926, who had had no prophylactic dilation of his esophagus. Prophylactic dilation was tried on a 5 year old boy who drank a caustic boiler compound, but a stricture developed in the fourth week. The only other one who showed any sign of stricture was a 17 month old boy who drank dissolved lye. He had some narrowing of the esophagus in the third week of daily dilation. When he was examined with an esophagoscope, a circular burn of the upper third of the esophagus was seen. He was treated by cautious daily dilation for one month, the dilation being done from above with mercury-filled bougies, the largest which could be passed with ease being left in place for fifteen minutes before proceeding to the next. During the four months since the injury his esophagus has been dilated at intervals of two to seven days by his local physician, and at present a 30 F bougie can be passed with slight resistance. The child has no dysphagia. One child who ate drano® in 1941 was watched in the hospital by his private physician without dilation, and a stricture did not develop. It is an indictment of the medical profession that, although in 31 of our 39 cases the patient was seen by a physician within forty-eight hours of the burn, in most of the cases the parents were instructed to give local treatment of the mouth and were assured that all would be well.

TABLE 1.—*Intervals of Time Between Ingestion of Lye and Severe Dysphagia*

Time	Cases
Less than 1 week	1
1 to 3 weeks	9
3 to 5 weeks	7
5 to 8 weeks	2
More than 8 weeks	3
Unknown interval	8

During the past few years a general plan of early treatment has been followed with all the patients:

> All children who give a history of having ingested lye are admitted to the hospital regardless of whether or not burns are seen in the mouth. The stomach is not lavaged, nor are emetics given. The patients are fed a liquid or soft diet with frequent sips of orange juice. If there are burns on the tip of the tongue only, or if there is a history of the child's ingesting lye without evidence of burns in the mouth, the patient should be examined with a laryngoscope and then cautiously with an esophagoscope from twenty-four to forty-eight hours after the burn. If no evidence of burn is found by an experienced endoscopist, one is justified in observing the child a few days longer and then sending him home after instructing the parents to bring him back for reexamination at frequent intervals for six months but to return immediately if he begins to have difficulty with solid foods.
>
> If burns are seen on the tonsillar pillars or the soft palate, prophylactic dilation of the esophagus with mercury-filled rubber bougies[2] is begun forty-eight to seventy-two hours after the burn. *The method used is essentially that described* by Kernodle.[3]
>
> At first a 14 F bougie is passed into the stomach without force and left five minutes. If this is well tolerated, the 16 F is passed. The size of the bougie and the length of time it remains in place are increased until, between the fourth and seventh days after the start of dilatations, a 30 F bougie is left in place for thirty minutes. The course of daily dilatations is continued for periods of from two to four weeks, depending on the apparent severity of the burn. Subsequently a dilatation is produced with the 30 F bougie every other day for two weeks, twice a week for one to two months, once a week for one to two months, every other week for two months and then once a month during the remainder of the year. It is important that early in the treatment the patient be examined by roentgenogram or by fluoroscope with the bougie in place, to make sure it reaches the stomach. If during the use of a mercury-filled bougie undue resistance is met, force should not be used; the patient should be examined with the esophagoscope and the esophagus dilated once or twice under direct vision. If it is then considered safe, the dilatations from above with mercury-filled bougies may be resumed cautiously.

TABLE 2.—*Location of Strictures*

Location	Cases
Upper third	9
Middle third	9
Lower third	5
Extensive and multiple	7

It has been our experience that these patients have bouts of fever after dilation during the early weeks of treatment. This is probably due to the shock of dilation. One child, for instance, had no fever when retrograde dilation was done under tribromoethanol anesthesia, whereas, his temperature rose to 39 or 40 C. (102.2 to 104 F.) when dilatations were done without the use of an anesthetic.

TABLE 3.—*Patients Seen Before Stricture Formation*

		Outcome		
Treatment	Total No.	Severe Stricture	Slight Stricture	No Stricture
No early dilation	2	..	1*	1
Early dilation (method 1) for 2 weeks or more	9	2†	..	7

* The patient was subsequently treated by method 2.
† One of these is being treated by method 1 and the other by method 2.

During infections of the upper respiratory tract swallowing and dilation become more difficult. It has been found that, whereas a child tolerated the passage of a 28 F bougie without difficulty one week, the next week, in the presence of an infection of the respiratory tract, no bougie larger than an 18 F or a 20 F could be passed. The dangers of mediastinitis and stricture during such an infection must not be overlooked.

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[2] Bougies may be obtained from the Murray Baumgardner Company, Baltimore, Md.

[3] Kernodle, G. W.; Taylor, G., and Davison, W. C.: Lye Poisoning in Children, Am. J. Dis. Child. 75:135 (Feb.) 1948.

The psychologic aspects of the procedure of dilation are most important:

The child is made to fast for five to six hours beforehand. Everything necessary for the procedure—bougies, lubricant, mouth gag, suction machine and sheet for restraining the child—should be in place before the patient is brought into the treatment room. Then firmly but kindly he is "mummied" by an assistant, and the bougie is passed without force as soon as possible afterward. When the desired size has been passed, the restraints are released, and a sympathetic nurse or the mother, holding the tube in place, sits with the child until the tube is removed twenty to thirty minutes later. As soon as the procedure is over, all the equipment used is removed from sight, and the child is given water and then something to eat. The parents are requested not to discuss the accident or its treatment in the patient's presence. Usually the children tolerate dilation done from above better than they do retrograde dilation.

While the mouth is painful from the burn the patient is kept on a liquid diet including generous quantities of orange juice, and the diet is increased to soft and solid foods as tolerated. Gelatin desserts and puréed fruits and vegetables are usually taken better than bread, potatoes and cereals.

Table 4.—*Patients Treated After Stricture Formation*

Method	Treatment	Total No.	Treatment Completed: No Dysphagia	Treatment Completed: Slight Dysphagia	Treatment Completed: Died	Treatment Still Going on	No Follow-Up
1	Dilation with mercury-filled bougies	1	..	..	..	1	..
2	Dilation under direct vision from above...	6	..	2	1	..	3
3	Gastrostomy with retrograde dilation........	21	4	7	1*	5	4†
4	Surgical repair of esophagus	2	1	1	..	..	..

* The patient died from measles and pneumonia in 1934.

† One child whose gastrostomy wound closed has not been heard from in five years.

During the acute phase the patients are given supportive therapy, such as blood transfusions and parenteral administration of plasma and fluids. Penicillin therapy is instituted promptly and continued as long as there are burns in the mouth.

2. *Dilation of Stricture from Above Under Direct Vision.*—Ten children who already had strictures on admission have been treated by dilation from above under direct vision. Four of these were treated by this method at first, but later gastrostomy with retrograde dilation was used because of failure of the aforementioned method. The results in the 6 who received only dilation from above are summarized in table 4. This method has not been satisfactory in our hands because it has been difficult to get the parents to keep the appointments for dilation.

3. *Gastrostomy with Retrograde Dilation.*—Twenty-one patients with stricture have been treated by gastrostomy and retrograde dilation. In 11 of these the gastrostomy openings have been closed at least two years, and we have sufficient follow-ups so that we can evaluate our results. Four of the 11 patients report no dysphagia, but 7 have some difficulty in swallowing certain foods when they chew them inadequately. However, even those who have occasional dysphagia do not regard this as a disability. Five children are still under treatment. The follow-ups on 4 others are inadequate; however, the gastrostomy opening has closed in 1. (See table 4.)

Although this method is usually successful, the treatment is long and tedious. A total of 12 gastrostomy openings have closed. In these the time from the opening to the closure averaged two years and four months. The shortest period was eleven months and the longest four years. There is 1 patient, however, whose gastrostomy fistula has been open for seven years, and his esophagus is still being dilated by the retrograde method. In most cases the passing of the string for retrograde dilation has been difficult. An average of forty-four days elapsed between the time the gastrostomy was done and the time at which the string could be passed.

4. *Surgical Repair of the Esophagus.*—Two children have been treated surgically. One was an 8 year old boy who had swallowed lye five years previously. A gastrostomy had been done soon afterward, and the patient had been fed through it. No effort had been made to do retrograde dilation. He was admitted in 1938 with a complete stricture of the esophagus at the level of the suprasternal notch. The plastic surgeons constructed an external skin-lined tube connecting the ends of the esophagus. This operation was completed in 1943, and the patient now has no difficulty in swallowing. Occasionally he has some epigastric pain due to a reflux of gastric contents into the skin-lined tube.

The other surgically treated patient is a 2 year old girl who drank a strong solution of lye and within one week had a narrow stricture at the cardia. After three weeks she was examined with an esophagoscope, and the upper part of the esophagus seemed normal. Four weeks after the burn the thoracic surgeons excised the injured portion of the esophagus, brought the stomach part way up into the chest and performed esophagogastrostomy with vagotomy. A follow-up five months later shows that the patient has no dysphagia for solids or liquids and has gained weight well. There is no evidence of stricture on barium sulfate swallow.

If esophagogastrostomy is to be considered, gastrostomy will make such a procedure impossible; therefore, a definite choice of one method or the other must be made at the outset. On the other hand, the curvature of the esophagus just above the anastomosis in the patient just described would make dilation from above an extremely dangerous procedure if a postoperative stricture should form.

SUMMARY

Thirty-nine cases of lye burn have been studied with special attention being paid to the results of the various forms of treatment. Generally speaking, when patients are seen early, prophylactic dilation seems to give the most satisfactory result. After the formation of a stricture, gastrostomy with retrograde dilation, though often long and unpleasant, usually produces satisfactory results in the long run. There have not been enough patients who have been treated surgically in our series to justify conclusions; however, in 2 cases surgical reconstruction has given promising results.

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129 Veterans Hospitals.—The Veterans Administration in June 1949 opened a new 399 bed general medical and surgical hospital in Providence, R. I., bringing the total number of VA hospitals to 129.—Veterans Administration, Release, July 5, 1949.

Clinical Notes, Suggestions and New Instruments

REMOVAL OF SADDLE EMBOLUS OF AORTA

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The diagnosis, symptomatology and successful treatment of arterial emboli have been greatly clarified in recent years. There have been numerous reports in the last decade[1] in American literature of successful embolectomies to save a limb or a life. However, this surgical emergency is not so common in an individual practice that anyone amasses a large series of cases.

The first successful embolectomy was performed by Lahey in 1911,[2] followed shortly with another by Key in the same year. The operation had been attempted unsuccessfully as early as 1895 by Abanejew. Between 1895 and 1911 Moynihan, Stewart, Doberauer, Murphy, Carell and others attempted the procedure. Scandinavian countries led all others in the development of this branch of surgery, and it was not until 1927 that American, British and Canadian surgeons began to perform the operation in other than scattered instances.

It is generally agreed that an embolus in a greater vessel is a true surgical emergency, and the successful outcome of such a case depends primarily on early diagnosis and treatment. In a large percentage of patients with arterial emboli there is preexisting left-sided heart disease, either auricular fibrillation, rheumatic heart disease, coronary occlusion or endocarditis. Patients who have any of these diseases are usually exceedingly ill, and the added complication of the occlusion of a major vessel is a serious matter. Diagnosis is usually not difficult. Pain is usually present, although varying in degree. This is thought to be caused by ischemia of the limb and the spasm of the vessels that is set up by the embolus. The affected limb may be cold and blanched, or it may present a characteristic mild, mottled cyanosis with evidence of considerable decrease in capillary exchange, demonstrated by pressure. Perhaps the best single aid in the diagnosis of this disease is the sudden cessation of pulsation in previously palpable vessels. The site of the embolism is usually not difficult to determine if one bears in mind the fact that emboli usually lodge at a point of major bifurcation. Most surgeons believe that once the diagnosis of embolism is made, early surgical removal of the clot offers by far the greatest chance of success. Even though collateral circulation seems adequate at the time, propagation of the thrombus and secondary spasm of the blood vessels may later completely occlude the vessel at a time when surgical removal of the embolus is no longer possible.

Key[3] and Lund[4] report 37 and 38 per cent cures by embolectomy. Lund further reports only 10 per cent survival among patients given more conservative treatment. According to Key the expected survival rates of life and limb, according to the location of the embolus, are as follows: brachial axillary, 44 per cent; femoral, 20 per cent; popliteal, 20 per cent; aorta, 17 per cent, and iliac, 15 per cent.

The accessibility of the artery involved is always an important factor, since most of the patients, as mentioned before, are poor surgical risks because of heart disease. The physicians doing most of this work feel, however, that, while technic is important, it should be within the ability of most general surgeons to treat these patients successfully, using the instruments and materials available in any well equipped hospital. Pennoyer[5] especially urges that, even in seemingly hopeless cases, an attempt be made to relieve the blockage in the vessel, since unusual success has often followed a bold attack on the embolus.

The technic of exposing any of the greater vessels is familiar to every general surgeon and needs no discussion here, nor should the routine administration of blood need emphasis. It is sufficient to say that the vessel should be stripped of its adventitia and exposed for a sufficient extent at the site of the embolus to allow the passage of a soft rubber strip or tube or of a protected clamp around the vessel, both above and below the occluded area, for control of bleeding when the vessel is opened and the embolus removed. The opening made in the vessel should be only large enough to allow adequate removal of the clot, and great care should be taken to avoid injury to the intima. Pulsation should be immediately restored if the obstruction has been completely relieved. Five-O silk on fine needles is recommended for closure, with interrupted sutures placed in a single row in order to carefully evert the intima. Although little mention is made of sympathectomy in the literature, we believe that this procedure, either periarterial or of the chain itself, should always be performed. This adds little to the risk, prevents secondary vessel spasm and greatly favors the survival of a limb with an impaired blood supply.

Postoperative care should consist of the intelligent use of supportive therapy aimed both for the care of the immediate surgical condition and for the cardiac or other systemic disease that precipitated the formation of the embolus. Most writers believe that the involved limb requires no specific treatment except slight elevation and rest.

Whether or not anticoagulants should be used is certainly not clear. In the case reported herein, heparin sodium was used and serious complications ensued. As will be brought out later in the case report, the administration of heparin sodium may have been a life-saving factor, but it was certainly almost lethal in its immediate results.

The problems of treatment were considered to be of sufficient interest to justify reporting the following case.

REPORT OF CASE

A. H., a white man aged 41, had been under treatment by one of us (A. S. H.) since 1944, because of moderate hypertensive cardiovascular disease. His blood pressure had varied from 160 systolic and 90 diastolic to 200 systolic and 100 diastolic. He was examined at fairly regular intervals, and in 1945 an electrocardiogram showed an entirely normal record. He presented himself for treatment because of occasional precordial pain which radiated to the left shoulder. The use of sedatives and moderation of exercise were adequate to control his discomfort until Nov. 10, 1947, at which time he was seized with severe substernal pain and dyspnea. His temperature was 101 F. The electrocardiogram revealed an extensive anterior myocardial infarction. He was admitted on November 10 to the Queen's Hospital.

The condition of the patient during his first week of illness was extremely serious, but he slowly rallied and was apparently making a satisfactory recovery until November 18, eight days after admission, when another cardiac infarction developed. Shortly thereafter, he complained of extreme pain in his left leg. Examination revealed that the limb was cold, white and pulseless. It was obvious that an embolus had developed, probably in the common iliac artery. An embolectomy was considered at that time, but because of the actual cardiac decompensation and the recent coronary infarct, it was decided to sacrifice the patient's leg in order to save his life. Dry gangrene of the leg below the knee ensued, but his coronary condition improved to such an extent that on December 10, one month after admission to the hospital, a low thigh amputation of the left leg was successfully performed with spinal anesthesia.

From The Clinic, founded by Dr. George F. Straub.

[1] (a) Dickinson, A. M.: Embolism of the Peripheral Arteries, Am. J. Surg. **57**: 508-512 (Sept.) 1942. (b) Pratt, G. H.: The Surgical Treatment of Peripheral Embolism, ibid. **56**: 566-572 (June) 1942. (c) Koucky, J. J.; Beck, W. C., and Hoffmann, J. M.: Peripheral Arterial Embolism, ibid. **50**: 39-49 (Oct.) 1940.

[2] Cited by Pratt.[1b]

[3] Key, E.: Embolectomy on the Vessels of the Extremities, Brit. J. Surg. **24**: 350-361 (Oct.) 1936.

[4] Lund, C. C.: The Treatment of Embolism of the Great Arteries, Ann. Surg. **106**: 880-909 (Nov.) 1937.

[5] Pennoyer, G. P.: Arterial Embolectomy, Surg. Clin. N. Amer. 366-372 (April) 1948.

After several weeks the patient was discharged to his home on crutches. He was fairly active and moved about well on his crutches until Dec. 28, 1948, a little over a year after his original illness, when another myocardial infarction occurred. He was again hospitalized, and again convalescence was uneventful until about 8: 30 a. m. on Jan. 10, 1949, when he was seized with a severe pain in the lower part of the abdomen radiating to the back. Examination of the lower limbs revealed that they were cold with a mild, mottled, generalized cyanosis. There was no pulsation in either femoral artery. It should be mentioned at this time that after the first embolus there had been no palpable pulse below the femoral artery in the remaining leg. The patient further complained of numbness across the lower portion of the abdomen and across the stump of the left leg. It was believed that a saddle embolism of the aorta had developed which had completely cut off the arterial supply below the bifurcation of the aorta on both sides. Surprisingly, his general condition was fair. His blood pressure was 130 systolic and 90 diastolic. He had no cardiac discomfort or dyspnea and was apparently well compensated. He was prepared immediately for surgical intervention, and, with spinal anesthesia, a long modified McBurney incision was made in the right side, which allowed adequate exposure by the retroperitoneal route of the bifurcation of the aorta. There was no pulsation in the distal 2½ inches (6.35 cm.) of the aorta, the entire length of which showed decided atheromatous degeneration and calcification. This was present in such a pronounced degree that it was difficult to find a reasonably normal portion of the vessel to incise. A lumbar sympathectomy of the right side, removing the second and third lumbar ganglions and the intervening chain, was immediately performed. The greater vessels, including the aorta, were freed of adipose tissue and adventitia, and small soft rubber tubes were placed around the greater vessels distal to the mass, which could be felt to fill the distal 3 inches (7.62 cm.) of the aorta, the common iliac, the external iliac and hypogastric arteries. A rubber-covered intestinal clamp was placed approximately 2½ inches (6.35 cm.) above the bifurcation of the aorta.

A longitudinal incision, 1.5 cm. in length, was made just above the bifurcation. The lower portion of the embolus, which occupied the common iliac, external iliac and hypogastric arteries, was easily milked through this small incision. The rubber tubes on the lesser vessels were drawn tight, and the clamp on the aorta was then carefully opened. Much to our satisfaction, the force of the arterial blood blew the entire upper portion of the embolus out through the incision. It weighed 11 Gm., was grayish white and obviously well organized. There was little evidence of recent thrombus formation. When the embolus was removed from the aorta a large plaque of intima, 2.5 by 1.5 cm., was also recovered. Gentle aspiration into the greater vessels in all directions failed to reveal any other portion of embolus. The finger was placed over the incision in the aorta, and normal pulsations ensued in all vessels. During this time the patient's blood pressure remained at about 130 systolic and 80 diastolic. It was a simple matter to prevent bleeding through the incision merely by placing the gloved finger over the opening. The incision in the aorta was then closed, using seven or eight mattress type interrupted sutures (00000 braided silk) so placed as to adequately and completely evert the intima. There was no bleeding at the line of the suture after the aortic clamp was removed. The abdominal incision was then closed without drainage, using interrupted sutures of 000 silk.

The patient's condition immediately after the operation was excellent. There was normal femoral pulsation. The foot and leg felt abnormally warm and were of good color. It was agreed by all who saw the patient postoperatively that the sympathectomy was in a large part responsible for this favorable condition.

Because of the incision in the aorta and the extensive atheromatous changes and, furthermore, since a large area of intima had been removed at the time of the operation, it was believed that thrombus formation would be almost certain to occur if some form of anticoagulant therapy were not used. Because of the uncertainty of the effects of dicumarol[2] and the difficulty in controlling its action, it was thought that heparin sodium probably would be the safest and best drug to use in the circumstances, since its action is prompt and since it is excreted rapidly. Administration of this drug presented a serious problem, for the patient was unable to tolerate large amounts of intravenous fluids because of his cardiac condition. The heparin sodium was given in small amounts of dextrose solution intravenously at three hour intervals. The amount given varied, but it usually required from 75 to 100 mg. to maintain the clotting time between fifteen and thirty minutes. Administration of this drug was continued for five days. There was apparently no bleeding into the incision or into the retroperitoneal space until January 13, the fifth postoperative day. That evening at 9: 30 p. m. the patient was suddenly seized with severe pain in the lower part of the abdomen and went into profound shock with sweating, cold and clammy skin, thready pulse and other signs of severe hemorrhage. Inspection of the wound revealed it to be bulging. Palpation revealed a large mass about 10 by 5 inches (25.40 by 12.70 cm.) on the right side of the abdomen. At first it was believed that the suture line in the aorta had given way. Blood transfusion was immediately begun and repeated. The patient was watched closely for the next twenty-four hours, but the mass did not seem to increase in size. Thirty milligrams of vitamin K was given subcutaneously in divided doses during the first two hours following recognition of the hemorrhage. The clotting time when the hemorrhage occurred was twenty-four minutes. At the end of the first blood transfusion and the administration of vitamin K, the clotting time had fallen to twelve minutes. The next morning, twelve hours after the onset of hemorrhage and after the administration of a second blood transfusion, the clotting time was five minutes. The patient's general condition following his original shock was satisfactory.

Since further bleeding did not occur and all layers of the abdominal wall were involved in the hematoma, we assumed that the bleeding was not from the aorta but from the wound in general and that it resulted from heparin sodium therapy. The patient continued to complain of severe pain in the right side of the abdomen. After much deliberation, it was decided that it would be best to evacuate the hematoma, since its removal seemed to present less risk than that which might follow complications such as infection, which might easily ensue if such a huge blood clot were left to absorb by itself.

Therefore, on January 17 the lower portion of the incision was reopened and about 1,200 cc. of chicken fat clots and dark viscid blood was evacuated. No attempt was made to explore the region of the incision in the aorta. There was no evidence of bleeding at the time of the evacuation of the clot. Convalescence of the patient following this second surgical procedure has been smooth. At present writing, nine months postoperatively, he is back at work on crutches; the right leg is warm; there is excellent pulsation in the femoral artery, and he has no pain or discomfort of any kind aside from slight soreness in the incision. He is being fitted with an artificial leg.

SUMMARY

The case reported is typical in nearly every respect. The patient had been ill with severe left-sided heart disease. The symptoms of saddle embolism were unmistakable, and the diagnosis was made promptly.

Surgical removal of the clot was completed less than two hours after lodgment of the embolus and was much less difficult technically than might be anticipated. The lumbar sympathectomy is believed to have contributed materially to the successful outcome of the operation.

It is believed that the use of heparin sodium probably prevented thrombus formation at the site of operation, which was traumatized both by the incision into the aorta and by the application of the clamps for control of bleeding, which actually dislodged a large portion of degenerated intima.

This case bears out the fact that every victim of arterial embolism, no matter how apparently hopelessly ill, should be given the benefit of surgical treatment if operative intervention will offer any chance for survival.

AORTIC EMBOLECTOMY

Successful Removal of Saddle Embolus by Transabdominal Route

HARWELL WILSON, M.D.
Memphis, Tenn.

The dramatic result which may follow successful aortic embolectomy in a patient otherwise doomed to almost certain early death is widely appreciated. Although definite advances have recently been made in the surgical treatment of lesions of the aorta, Keeley,[1] reporting in 1948, was able to find reports of only 21 cases of successfully treated aortic embolism. He recorded an additional case of his own. The purpose of this report is to record another successful embolectomy of the aorta, to consider briefly some of the unusual features of this case and to make another plea for the early recognition and operative treatment of this type of lesion.

REPORT OF CASE

History.—The patient, a white man aged 57, entered the Baptist Memorial Hospital at 12:30 p. m. on Dec. 2, 1948. He had been seated at his desk at 9 a. m. when he had suddenly felt both lower extremities become numb and cool. This numbness and coolness was soon followed by pain in both hips, and this pain radiated down the backs of his legs, being severer on the left side. The patient telephoned his internist, Dr. W. C. Chaney, who, from the symptoms described by the patient, made a diagnosis of saddle embolus of the aorta. The patient was instructed to enter the hospital immediately but decided to go home instead. There he was given ¾ grain (0.049 Gm.) of morphine by his internist, who persuaded him to go to the hospital, where he was examined in consultation by Dr. C. H. Sanford, who concurred in the diagnosis of saddle embolus of the aorta.

The patient's past history revealed no evidence of heart disease. Six weeks prior to this admission he had been confined to his home with pleurisy, the exact cause of which was not apparent. There was a long-standing history of varicose veins and of thrombophlebitis involving both legs.

Operation.—At 2 p. m., just five hours after the onset of symptoms, a long paramedian incision was made in the abdomen. The abdominal viscera were retracted and the posterior parietal peritoneum was opened over the aorta, which was constricted about a clot at the site of its bifurcation. The embolus extended into the opening of each iliac artery. Soft rubber catheters were passed beneath each common iliac artery below the thrombus, and these were used to occlude the vessels at the time the aorta was opened. The aorta was similarly constricted above the embolus with a soft rubber tube. A diagonal incision extending into the right iliac artery was made in the aorta. The embolus was lifted out intact with an Allis forceps. Suction with a rubber catheter into the right and then into the left iliac artery produced no additional clots. The aorta was closed with a continuous everting suture of 5-0 arterial silk. After the opening in the posterior parietal peritoneum was sutured, the abdomen was closed. The blood pressure at the end of the operation was 135 systolic and 80 diastolic. This reading was similar to that found on examinations before the embolus developed, and the pressure, following operation, remained normal. It is of interest that from the time of hospital admission until after the embolus was removed the blood pressure varied from 180 to 190 systolic and 90 to 100 diastolic. At 7 a. m. on the morning following operation the patient's son, a physician, noted the presence of the dorsalis pedis pulse in both feet.

Postoperative Course.—During the convalescent period the heart was further studied, and roentgen and electrocardiographic examinations were reported as showing no abnormality. The convalescence of the patient was uneventful except for the collection of a large amount of serum in the wound. He left the hospital Jan. 6, 1949.

On March 2 the patient experienced sudden, rather severe pain in the left side of his chest and had a chill shortly after the onset of the pain. Hospital admission occurred on March 3 and a roentgenogram of the chest revealed a wedge-shaped area of increased density, which was believed to be an infarct, in the left lung field. Examination disclosed a positive Homan's sign on the dorsiflexion of the right foot.

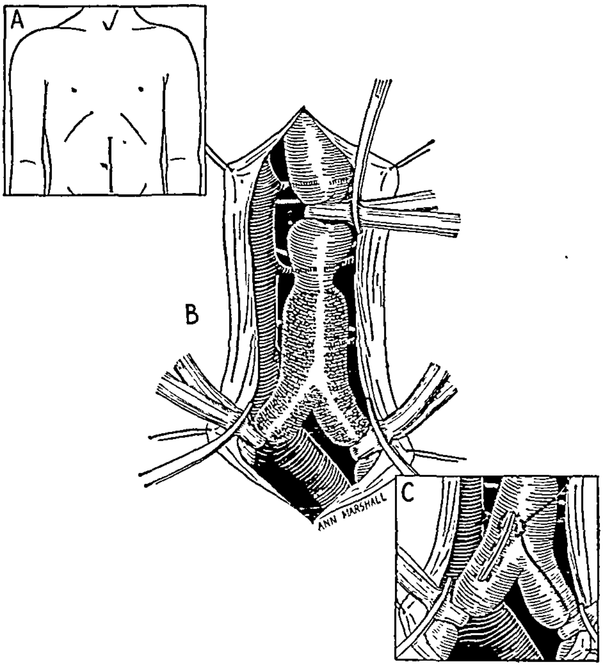
The patient was again seen in consultation by me on March 5. It was believed that the pulmonary infarct demonstrated by the roentgenogram had originated from a dislodged thrombus in the legs. A bilateral femoral vein exploration and ligation below the profunda branch was performed. At exploration there was evidence of some organized thrombi in both femoral veins. The right saphenous vein was also divided at the saphenofemoral junction.

On the fourth postoperative day the patient exhibited symptoms which were interpreted as representing a mild embolic process involving the right cerebellar region. These symptoms subsided rapidly, leaving no residual effects, and the patient left the hospital on March 15. At the time of writing he appeared to be well.

COMMENT

The lodging of an embolus in any large artery is not only a serious condition in itself but also one that indicates the presence of a serious lesion elsewhere in the body which gave rise to the embolus. The great majority of such emboli come from the heart. Most patients who experience embolic occlusion of a major vessel are known at the time to be suffering from coronary heart disease, rheumatic endocarditis, auricular fibrillation or some associated type of cardiac disease. Atheromatous plaques in the aorta may produce secondary aortic emboli. There have been occasional reports of paradoxic emboli, arising from venous thrombi, reaching the aorta via a septal defect in the heart.[2] It is possible that thrombi formed in the pulmonary veins might give rise to an aortic embolus. The complete obstruction of the aorta at its bifurcation is the most serious of all peripheral embolic phenomena and, according to de Takats, represents 10.14 per cent of all peripheral emboli.[3]

The case reported herein is of special interest in that the source of the embolus was not apparent. The patient did not show evidence of heart disease either before or after the aortic



A shows incision used for transabdominal aortic embolectomy. *B* illustrates appearance of saddle embolus at bifurcation of aorta and demonstrates method of preventing hemorrhage when aorta is opened. *C* illustrates location of incision in vessel and shows method of closure with continuous everting suture of 5-0 silk, reinforced with one mattress suture.

From the Department of Surgery of the University of Tennessee College of Medicine and the Baptist Memorial Hospital.

[1] Keeley, J. L.: Saddle Embolus of the Aorta, Ann. Surg. **128**: 257-265, 1948.

[2] Birch, C. A.: Paradoxical Embolism with Report of a Case Due to a Ventricular Septum Defect, Brit. M. J. **2**: 722-728, 1948.

[3] de Takats, G.: Surgical Treatment of Acute Vascular Occlusions, S. Clin. North America **22**: 199-220, 1942.

embolectomy. The history, physical examination and electrocardiogram all failed to show evidence of cardiac disease. However, since the patient had long had a history of recurrent thrombophlebitis in the extremities, this may have been an instance of paradoxic aortic embolus. The pleurisy experienced six weeks prior to the development of the saddle embolus may have been followed by thrombophlebitis or phlebothrombosis of the pulmonary vein. A large atheromatous plaque at some point higher in the vessel could be the site of origin of such an embolus.

It is of interest that this patient, who previously had had a normal blood pressure reading, was found to have a reading of 180 systolic and 90 diastolic when he entered the hospital with symptoms and signs of saddle embolus. The pressure returned to normal shortly after the embolus was removed. The elevation of the blood pressure in this instance would seem to have been caused by the blocking of the distal aorta and by the associated arterial spasm. In an experimental study in dogs, Brooks[4] found that ligation of the aorta below the inferior mesenteric artery had little effect on the pressure in vessels proximal to the ligation. However, there was a decrease in cardiac output, and it was believed that some fluid shift in the body resulted from the ligation. It appears that in this occlusion of the aorta the amount of associated vasospasm was greater than was the case in the ligation experiments of Brooks.

In most instances it appears that a direct attack on the embolus through the aorta is the favored procedure.[5] Several saddle emboli have been removed successfully by retrograde milking and retrograde probing; however, I believe that the more direct approach is usually preferable.[6]

899 Madison Avenue.

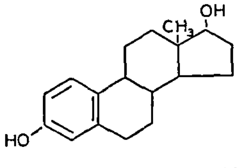
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

ESTRADIOL-U. S. P.—Ovocylin (CIBA).—Alpha-Estradiol. — 3,17-Dihydroxy-Δ-1,3,5-estratriene. $C_{18}H_{24}O_2$. — M.W. 272.37. The structural formula of estradiol U. S. P. may be represented as follows:



For description and standards see the U. S. Pharmacopeia under Estradiol.

Actions and Uses.—Alpha-estradiol is considered to be the form of the estrogenic hormone produced by the human ovary and is one of the more potent of the known compounds having estrogenic activity. It therefore shares the actions and uses of other estrogens and is subject to the same contraindications. (Also see general statement on Ovaries and the subsection on Estrogen.)

Alpha-estradiol is available as the pure crystalline compound, but it is mainly useful only as an oral or topical adjunct to parenteral therapy with the esterified compounds of estradiol or other injectable estrogens because it is subject to rapid destruction on injection. It also loses some activity when administered orally.

The use of ointment for inunction in mammary hypoplasia is considered to be of negligible value and offers no advantage over systemic therapy.

Dosage.—Alpha-estradiol is administered orally in the form of tablets or topically for local treatment of the vagina in the form of suppositories. Dosage is prescribed on a weight basis in preference to the unit systems which are sometimes used for impure estrogens or mixtures of various estrogenic substances. For the sake of comparison, it may be stated that 1 mg. of alpha-estradiol corresponds to 12,000 rat units, which is approximately equivalent to 120,000 I. U.

For initial therapy of the menopausal syndrome, when parenteral injection of other compounds may be undesirable or inconvenient, 0.5 mg. three times daily usually produces a prompt response; for maintenance, from 0.1 to 0.2 mg. three times daily may be sufficient. When a greater response is desired, parenteral therapy with injectable compounds may be used to start therapy and this followed by oral maintenance therapy with alpha-estradiol alone.

For local treatment in the vagina, a suppository containing 0.4 mg. inserted at bedtime is recommended for adults, in conjunction with systemic therapy. Lesser amounts for local vaginal treatment may be used in children, but such treatment is no longer the therapy of choice for gonorrheal vaginitis.

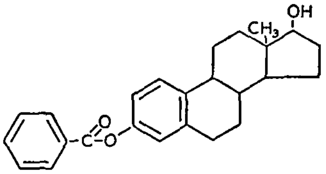
CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Vaginal Suppositories Ovocylin: 0.04 mg. and 0.4 mg.

Tablets Ovocylin: 0.1 mg., 0.2 mg. and 0.5 mg.

U. S. patent 2,096,744; U. S. trademark 362,717.

ESTRADIOL BENZOATE-U. S. P.—Ovocylin Benzoate (CIBA).—Alpha-Estradiol benzoate.—Δ-1,3,5-Estratriene-17-ol-3-benzoate. $C_{18}H_{23}O.C_7H_5O_2$.—M.W. 376.47. The structural formula of estradiol benzoate U. S. P. may be represented as follows:



For description and standards see the U. S. Pharmacopeia under Estradiol Benzoate.

Actions and Uses.—Estradiol benzoate, one of the esters of alpha-estradiol, is less subject to destruction in the tissues than its parent compound, alpha-estradiol, and it is thus suitable for parenteral injection and produces the same effects as alpha-estradiol. (See the monograph for Estradiol-U. S. P., the general statement on Ovaries and the subsection on Estrogen.) Esterification of alpha-estradiol slows its rate of absorption and elimination, so that the relative efficiency of the injectable estradiol benzoate is greater than that of orally administered alpha-estradiol. Estradiol benzoate is subject to the same contraindications as other estrogens.

Dosage.—Estradiol benzoate is administered by intramuscular injection as a solution in oil. It is given in doses expressed on the basis of the weight of the esterified compound. For the sake of comparison, it may be stated that 1 mg. of estradiol benzoate corresponds to 6,000 rat units, which is equivalent to 60,000 I. U.

For treatment of the menopausal syndrome, the initial dosage, depending on severity of symptoms, ranges from 1 mg. to 1.66 mg. twice weekly for two or three injections; for maintenance, from 0.333 mg. to 1 mg. twice weekly. In hypogenitalism and sexual infantilism, substitution therapy with doses of 1.66 mg. two or three times weekly is recommended. In functional uterine bleeding, 1.66 mg. three times weekly is recommended, followed by sequential progesterone therapy. In breast engorgement, 1.66 mg. daily is administered until the condition subsides. In kraurosis vulvae and senile vaginitis or pruritis vulvae, the dosage is indicated for the menopausal syndrome, except that this is sometimes supplemented by local therapy with vaginal suppositories of other estrogenic compounds. For palliation of prostatic carcinoma, 1.66 mg. three times weekly is injected.

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Solution Ovocylin Benzoate in Oil: 0.166 mg., 0.333 mg., 1.0 mg., 1.66 mg., in sesame oil, 1 cc. ampuls.

Solution Ovocylin Benzoate in Oil: 0.333 mg. and 1.66 mg. per cc., in peanut oil, 10 cc. vials.

U. S. patent 2,033,487; U. S. trademark 369,298.

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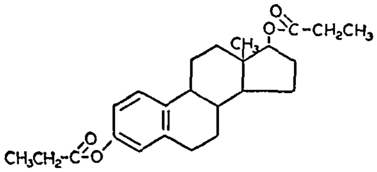
[4] Brooks, B.: Ligation of the Aorta: An Experimental Study, Tr. South. S. A. **39**: 228-240, 1926.

[5] Linton, R. R.: Arterial Embolism: A Simplified Technique for the Removal of a Saddle Embolus at the Bifurcation of the Aorta with the Report of a Successful Case, Surg., Gynec. & Obst. **80**: 509-516, 1945. Tendler, M. J.: Aortic Embolectomy: A Case Report, Memphis M. J. **23**:109-111, 1948. Keeley.[1]

[6] McClure, R. D., and Harkins, H. N.: Recent Advances in the Treatment of Peripheral Arterial Embolism, Surgery **14**: 747-797, 1943.

ESTRADIOL DIPROPIONATE.—Ovocylin Dipropionate (Ciba). — Δ-1,3,5-Estratriene-3,17-dipropionate. — $C_{18}H_{22}.(C_3H_5O_2)_2$.—M.W. 384.50.—The structural formula of estradiol dipropionate may be represented as follows:



Actions and Uses.—Estradiol dipropionate, an ester of alpha-estradiol less subject to destruction in the tissues than the parent compound, is suitable for parenteral injection to produce the effects of that estrogen and shares the actions and uses of estrogens in general. Its contraindications are also the same as for other estrogens. (See the monograph for Estradiol-U. S. P., the general statement on the Ovaries, and the subsection on Estrogen.)

Estradiol dipropionate, like estradiol benzoate, is absorbed more slowly and eliminated less rapidly than alpha-estradiol, but its effects are qualitatively the same as for other estradiol compounds. (Also see the monograph for Estradiol Benzoate-U. S. P.)

Dosage.—Estradiol dipropionate is injected intramuscularly as a solution in oil and is given in doses expressed in terms of the weight of the ester. On the basis of comparison with a single dose, it is considered to be approximately half as potent in terms of weight as estradiol benzoate, but, owing to its more sustained action, it is more potent than the benzoate when compared on the basis of maintenance milligram dosage required to provide equivalent therapeutic effects.

For the menopausal syndrome, the initial dosage ranges from 1 mg. to 5 mg. injected weekly for two or three injections; maintenance usually requires from 1 mg. to 2.5 mg. every 10 to 14 days. For substitution therapy in hypogenitalism and sexual infantilism, 2.5 mg. to 5 mg. weekly is recommended. For functional uterine bleeding, 5 mg. weekly is recommended followed by sequential progesterone therapy. In breast engorgement, 2.5 mg. daily are given until the condition subsides. The same doses as for the menopausal syndrome are applicable to kraurosis vulvae and senile vaginitis or pruritus vulvae. Systemic therapy may be supplemented by the local use of vaginal suppositories of alpha-estradiol. As a palliative in prostatic carcinoma, 5 mg. weekly are recommended.

Tests and Standards.—

Physical properties: Estradiol dipropionate occurs as small, white to offwhite crystals. It is almost insoluble in water; soluble in acetone, alcohol and dioxane; and sparingly soluble in vegetable oils. Estradiol dipropionate melts between 103 and 106 C.

Identity test: Accurately weigh approximately 0.1 Gm. of estradiol dipropionate, previously dried for 4 hours over sulfuric acid. Transfer it to a 10 ml. volumetric flask, fill to the mark with dioxane and determine the optical rotation using a 100 mm. tube. The specific rotation, $[\alpha]$ 25/D, is between + 35 and + 41 degrees.

Dissolve about 0.1 Gm. of estradiol dipropionate in 10 ml. of methanol. Add 0.15 Gm. of potassium carbonate dissolved in 0.5 ml. of water and reflux on a steam bath for 4 hours. Add 30 ml. of water and heat gently to evaporate the methanol. Add 15 ml. more water and keep at a temperature between 5 and 10 C. for 1 hour. Filter the precipitate with suction, wash with cold water until the washings are neutral to litmus paper, and dry the precipitate at 80 C.: the estradiol so obtained melts between 173 and 179 C.

Dissolve 2 mg. of the estradiol obtained by saponification in 2 ml. of sulfuric acid: the solution is greenish yellow and exhibits a slight green fluorescence. Divide the solution into two portions. To one portion add 1 ml. of water: the color changes to pale orange. To the other portion add 1 drop of ferric ammonium sulfate T.S.: the green fluorescence is greatly intensified; then dilute with water: the color becomes red to red-orange. Add 50 mg. of sulfanilic acid to 2 ml. of diluted hydrochloric acid and warm to dissolve. Cool the solution in an ice bath and add slowly with stirring 0.3 ml. of a 10 per cent aqueous solution of sodium nitrite. Dissolve 5 mg. of the estradiol obtained in the saponification in 5 ml. of a 10 per cent aqueous solution of potassium hydroxide and add to the diazotized sulfanilic acid: a deep red to red-orange color is produced.

Purity tests: Dry about 0.1 Gm. of estradiol dipropionate, accurately weighed, in a vacuum over phosphorous pentoxide for 4 hours at room temperature: the loss in weight does not exceed 0.5 per cent.

Char about 0.1 Gm. of estradiol dipropionate, accurately weighed; cool, add about 0.5 ml. of sulfuric acid to the cooled mass and ignite to constant weight: the amount of residue is not more than 0.1 per cent.

Assay: Estradiol dipropionate is assayed biologically.

Ciba Pharmaceutical Products, Inc., Summit, N. J.

Solution Ovocylin Dipropionate in Oil: 0.1 mg., 0.2 mg., 0.5 mg., 1 mg., 2.5 mg. and 5 mg. per cc. in sesame oil, 1 cc. ampuls.

Solution Ovocylin Dipropionate in Oil: 0.2 mg., 1 mg. and 5 mg. per cc. in peanut oil, 10 cc. vials.

U. S. patent 2,205,627; U. S. trademark 369,297.

SULFADIAZINE-U. S. P. (See New and Nonofficial Remedies 1949, p. 134).

The following dosage forms have been accepted:

Abbott Laboratories, North Chicago, Ill.

Dulcet Tablets Sulfadiazine: 0.15 Gm. and 0.3 Gm.

U. S. trademark 301,662.

SULFAMERAZINE-U. S. P. (See New and Nonofficial Remedies 1949, p. 138).

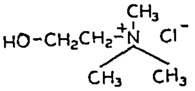
The following dosage form has been accepted:

Abbott Laboratories, North Chicago, Ill.

Dulcet Tablets Sulfamerazine: 0.3 Gm.

U. S. trademark 301,662.

CHOLINE CHLORIDE.—Trimethylhydroxyethylammonium chloride.—$C_5H_{14}ClNO$.—M.W. 139.63.—The structural formula of choline chloride may be represented as follows:



Actions and Uses.—Choline chloride shares the lipotropic actions and uses of other choline salts and is likewise recognized for clinical trial as an adjunct in the treatment of fatty infiltration of the liver. (See the monograph on choline dihydrogen citrate.)

Dosage.—Choline chloride is administered orally in doses of 1.5 Gm. to 3 Gm. daily, but precise dosage for this and other choline salts is not yet established.

Tests and Standards.—

Choline chloride occurs as a white, crystalline, deliquescent substance possessing an amine-like odor. It is very soluble in water, freely soluble in alcohol and practically insoluble in benzene, chloroform and ether. The *pH* of a 10 per cent aqueous solution is about 4.65.

Dissolve about 0.3 Gm. of choline chloride in 2 ml. of water. Add 5 ml. of mercuric potassium iodide T.S.: a pale yellow precipitate is formed.

Add 1 ml. of a 1 per cent solution of choline chloride to 2 ml. of a cobaltous chloride solution (U. S. P. test solution diluted 1: 25). Add 2 ml. of 2 per cent potassium ferrocyanide solution: an emerald green color develops immediately.

Dissolve 0.5 Gm. of choline chloride in 2 ml. of water and divide the solution into two portions. To one portion add a few drops of phosphotungstic acid T.S. and to the other a few drops of tannic acid T.S.: a white curdy precipitate forms with phosphotungstic acid and no precipitate forms with tannic acid *(absence of neurine)*.

The heavy metals limit (U. S. P. XIII, p. 657) does not exceed 30 ppm. in a test using 0.5 Gm. of choline chloride and 0.5 ml. of 1 *N* hydrochloric acid.

Dry about 1 Gm. of choline chloride, accurately weighed, for 24 hours at about 120° C.: the loss in weight does not exceed 0.5 per cent. Ash about 0.5 Gm. of choline chloride, accurately weighed: the residue does not exceed 0.05 per cent.

Accurately weigh about 0.3 Gm. of choline chloride into a 50 ml. volumetric flask and dilute to the mark with water. Transfer 20 ml. of the solution to a 250 ml. Erlenmeyer flask, add 80 ml. of water and 1 ml. of potassium chromate T.S. Titrate with 0.05 *N* silver nitrate. Each ml. of 0.05 *N* silver nitrate is equivalent to 0.006982 Gm. of choline chloride: the choline chloride content is not less than 97 nor more than 101 per cent on a dry basis.

Accurately weigh about 0.2 Gm. of choline chloride, U. S. P. Reference Standard, into a 100 ml. volumetric flask and dilute to the mark with water. Transfer 8, 6, 5 and 4 ml. portions of the solution to separate test tubes, to each tube add 5 ml. of a freshly prepared and filtered saturated solution of ammonium reineckate (about 0.15 Gm.: 5 ml.), shake and allow to stand for 20 minutes. Filter the mixtures with suction, collecting the precipitates in fritted glass funnels. Wash the precipitates with 5 ml. portions of ice-cold water until the filtrates are colorless and then with two 2 ml. portions of ice-cold absolute alcohol. Continue drawing air through the filter funnels until the precipitates are dry. Place test tubes under the stems of the funnels in the suction flasks and, with the aid of suction, wash the precipitates into the test tubes with three 5 ml. portions of acetone. Transfer the filtrates to 50 ml. volumetric flasks, rinse the test tubes with acetone, make up the solution to 50 ml. with acetone and shake. Measure the light absorptions at 5260 A with a spectrophotometer. (Use acetone to set the instrument to zero absorption.) Plot absorptions versus concentrations to give a standard curve. Accurately weigh into a 100 ml. volumetric flask about 0.1 Gm. of the choline chloride to be analyzed and dilute to the mark with water. Transfer 10 ml. of the solution to a test tube and proceed as before. Read the concentration of choline chloride from the standard curve. The choline chloride content is not less than 97 nor more than 101 per cent on a dry basis.

Solution Choline Chloride: From 5 ml. of the choline chloride solution prepare an aqueous solution whose final concentration is about 0.001 Gm. per ml. Transfer 10 ml. of this solution to a test tube and carry out the spectrophotometric determination described in the monograph for choline chloride, beginning with ". . . add 5 ml. of a freshly prepared and filtered saturated solution of ammonium reineckate . . ." The choline chloride content is not less than 90 nor more than 110 per cent of the claimed amount.

Abbott Laboratories, North Chicago, Ill.

Oral Solution Choline Chloride: 4 Gm. per 30 cc., 473 cc. and 3.78 liter bottles. An oral solution containing in each 30 cc., choline chloride 4 Gm., and benzoic acid 30 mg. and methylparaben-U. S. P. 12 mg. as preservatives, with saccharin, cane sugar, citric acid, caramel and raspberry flavor in distilled water.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET - - - CHICAGO 10, ILL.

Edited by
MORRIS FISHBEIN, M.D.
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Editor for Current Medical Literature, GEORGE HALPERIN, M.D.

Subscription price - - - - Twelve dollars per annum in advance

Cable Address - - - - "Medic, Chicago"

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SATURDAY, OCTOBER 8, 1949

TRAINING IN ANESTHESIOLOGY FOR GENERAL PRACTITIONERS

The announcement by the American Society of Anesthesiologists of completed plans to provide refresher courses on a national scale for general practitioners constitutes a significant contribution to the improvement of medical care. Under this plan more than seventy training centers have been established where any practicing physician, whether or not he is a member of the society, may secure training fitted to his needs under the direction of competent anesthesiologists.

The program has purposely been made flexible. One day sessions at weekly intervals will be provided for physicians who live close to an instruction center. Continuous courses of a week's duration or longer will be arranged for physicians coming from a distance. The courses will include lectures and demonstrations supplemented whenever possible by the anesthetic management of patients under supervision. The instructors will make themselves available by telephone or telegraph or in person for consultation. Most of the instruction centers will be able to provide this instruction without charging a fee.

This program has been adopted by the American Society of Anesthesiologists in recognition of the fact that many communities cannot support a full time, certified anesthesiologist.

Approximately 6,000,000 patients are anesthetized annually in this country in hospitals alone. Approximately 3,000 physician and resident anesthetists are members of the American Society of Anesthesiologists. Only one fifth of the society's members have been certified by the American Board of Anesthesiology. More than twice as many general practitioners administer anesthesia as are included in the total membership of the society. Many communities, however, are without medical anesthetists. A preliminary survey by the American Society of Anesthesiologists has shown that many general practitioners doing part time anesthesia desire instruction in modern anesthetic management with some of the more common agents and technics. Even more significantly, it has revealed that other general practitioners would be willing to administer anesthesia to patients in their rural areas if they could first receive proper instruction.

PREVENTION AND TREATMENT OF ATHEROSCLEROSIS

Knowledge of the factors involved in atherosclerosis, i. e., the most common type of arteriosclerosis characterized anatomically by the deposition of lipoidal matter in the arterial intima, has made significant progress recently. The clinical and experimental evidence supplies added weight to the concept that an instability of the plasma lipids of transitory or persistent nature is related to the development of these lesions. Abnormalities of the fat and oxygen metabolism represent the primary cause of these colloidal plasmatic disturbances.[1]

After Moreton[2] pointed out that the postprandial episodes of macrochylomicronemia following the intake of fatty meals might be related to atherosclerosis, Pollak[3] showed that cholesterol dispersed in serum and intravenously injected into rabbits was taken up by the arterial endothelium within a few minutes after injection. Although the total amount of chylomicrons after a meal is always in direct proportion to the quantity of fat ingested, Setälä[4] observed that the metabolic rhythm of the visible lipoidal plasmatic aggregates, i. e., the chylomicron curve, is characteristic for the individual and remains comparatively constant under the same external conditions. While most persons showed a rapid increase of the chylomicrons after a fatty meal followed by an abrupt drop, some persons displayed one or more, generally lower "after-peaks." Boas, Parets and Adlersberg[5] observed the comparatively frequent appearance of atherosclerosis in persons with a hereditary disturbance of the cholesterol metabolism, associated with hypercholesteremia. The coarser dispersion of cholesterol in the plasma which often but not always accompanies hypercholesteremia predisposes to the formation of endothelial foam cells through phagocytosis of precipitated cholesterol micels and occasionally may lead to the production of crystalline cholesterol emboli in small arteries of internal organs, with the subsequent development of foreign body granulomas.[6]

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1. Hueper, W. C.: Arteriosclerosis: A Review, Arch. Path. **38:** 162 (Sept.); 243 (Oct.); 350 (Nov.) 1944; **39:** 51 (Jan.); 117 (Feb.); 187, (March) 1945; Prevention and Treatment of Atherosclerosis, M. Clin. North America **33:** 773, 1949.

2. Moreton, J. R.: Physical State of Lipids and Foreign Substances Producing Atherosclerosis, Science **107:** 371, 1948.

3. Pollak, O. J.: Development of Atheroma: An Acute Colloidal Phenomenon, J. A. M. A. **139:** 1189 (April 23) 1949.

4. Setälä, K.: Preliminary Observations on the Effects of Irradiation Upon the Chylomicrons in Human Blood, Radiology **50:** 803, 1948.

5. Boas, E. P.; Parets, A. D., and Adlersberg, D.: Hereditary Disturbance of Cholesterol Metabolism-Factor in Genesis of Atherosclerosis, Am. Heart J. **35:** 611, 1948.

6. Meyer, W. M.: Cholesterinkrystallembolie kleiner Organarterien und ihre Folge, Virchows Arch. f. path. Anat. **314:** 616, 1947.

The important role which the relative amounts of lecithin and albumin have in stabilizing the colloidally dispersed cholesterol in the plasma, even when present in excessive quantities, was demonstrated recently by Ladd, Kellner and Correll.[7] These investigators found that atheromatosis did not develop in rabbits that had received intravenous injections of detergents (tween 80®), although there was a definite rise of the plasma cholesterol level, because there was a proportionally higher increase of the phospholipids. Probably the cholesterol-phospholipid ratio is important in modifying or preventing the development of atherosclerosis. Differences of this order may account for the fact that the diabetic hypercholesteremia in man is associated with a tendency to atherosclerosis, while alloxan diabetes in rabbits with dietary hypercholesteremia lacks this tendency.[8] Apart from a few exceptional conditions hypercholesteremia, such as that seen with lipid nephrosis, hypothyroidism, diabetes mellitus, essential xanthomatosis and pregnancy, favors the deposition of lipid in the arterial intima.

Ungerleider, Gubner and Rodstein [9] concluded from their analyses of 612 subjects that even so-called normal cholesterol concentrations (average cholesterol 211 mg. per hundred cubic centimeters) seem to predispose to the development of atherosclerosis, because the "normal cholesterol" level is in reality a high cholesterol level. If additional evidence should support this observation, Ungerleider and his co-workers proposed to make drastic changes in the American diet by restricting the fat intake. In connection with a study of the oxygen metabolism in old age, Chieffi and Kountz [10] found a decline in oxygen consumption during the early phase of degenerative arterial disease. While they expressed the opinion that the lowered oxygen consumption is unrelated to the thyroid activity, other investigators observed decreased activity of the thyroid with advancing age. Apart from the relationship existing between myxedema and atherosclerosis, these observations are important, because dietary atheromatosis in experimental animals (rabbits, chickens) can be prevented or delayed by the simultaneous administration of thyroid hormone, which seems to have value in the control of the human disease (Herrmann,[11] Chieffi and Kountz,[10] Israel [11b] and others). Another group of investigators attempted to attain this goal by influencing the fat metabolism through the administration of the lipotropic factors of the vitamin B complex, namely choline and inositol (Morrison,[12] Herrmann,[11] Steiner [13] and others). Although the preventive and therapeutic results obtained in man and animals by this approach have not been consistent, they are sufficiently promising to merit further study, especially in connection with other factors influencing both the oxygen and fat metabolism. Since investigations of the prevention and therapy of atherosclerosis in experimental animals do not give results directly applicable to man, well controlled studies of patients are essential. From an evaluation and integration of the available data, measures suitable for the prevention and therapy of atherosclerosis must correct the fundamental metabolic disorders and the hematic colloidal disturbances. In a recently published discourse on this subject,[1] the following four approaches to atherosclerotic control were considered: (1) restriction of caloric and fat intake for all atherosclerotic patients who either are overweight or have a plasma cholesterol level above 220 mg. per hundred cubic centimeters and substitution of animal fat by vegetable fat, especially fats containing long chain fatty acids which form esters with cholesterol and which are poorly absorbed, as arachidic acid in peanut oil; (2) stimulation of the oxidative processes by giving a diet rich in proteins, oxytropic members of the vitamin B complex (nicotinic acid, thiamine, riboflavin) and small amounts of thyroid hormone; (3) decholesterolization of tissue depots by the administration of the lipotropic factors of the vitamin B complex (choline, inositol, pyridoxine), and (4) stabilization of plasma cholesterol with adequate amounts of colloidal stabilizers, as lecithin and albumin.

Although effective prevention and therapy of atherosclerosis is still in the experimental stage, the general outlook has become brighter. With greatly intensified research in prospect for the near future, the chances of survival and recovery of patients with atherosclerosis will no doubt be improved greatly.

Current Comment

POISONING FROM DRAWING CRAYONS AND SAFETY MATCHES

Mothers frequently worry because a child has chewed or swallowed such materials as drawing crayons or safety matches. As many as twenty-five types of drawing or marking crayons, apart from variations in imparted colors, are available on the market. Safety matches are among the most widely used products. The paper shafts for safety matches and sometimes the wooden sticks for safety or "strike anywhere" matches are first impregnated with a solution of phosphoric acid and/or ammonium sulfate to eliminate afterglow. These same shafts or sticks may be dipped in paraffin or its equivalent, to promote burning, prior to heading but, instead, may be dipped after heading for water-proofing purposes. Neither white nor yellow phosphorus is now used in making matches, but occasionally the harmful form may exist as an impurity up to 0.6 per cent in the near harmless red phosphorus. In safety packet or box matches, red phosphorus, if at all present, is limited to the striking surface, where glue is also present, possibly with filler material, finely ground glass and coloring material. On striking surfaces, phosphorus sesquisulfide may appear. The chief constituents of the safety match head are antimony trioxide, potassium chlorate and sulfur, but with some variation. In addition, small quantities of manganese dioxide may be used as a catalyst for potassium chlorate. Zinc oxide, fine silica, plaster of paris, silicate powder, iron oxide and diatomaceous earth may appear as fillers. Glue or gum arabic may constitute the binder. Phosphorus sesquisulfide and/or red phosphorus are the active constituents of "strike anywhere" matches. The same sorts of fillers and glues are utilized. On occasion, bichromates are introduced into glues. In all types of matches, dyes are utilized and commonly are aniline dyes. To the extent used in matches, nearly all these substances are relatively nontoxic or are emetics or local irritants. If one assumes that a single match head contains 2 mg. of red phosphorus and of this harmless red phosphorus 0.6 per cent represents an impurity of harmful yellow phosphorus—the maximum and improbable—the match head may contain 0.012 mg. of harmful phosphorus. If the minimum fatal dose of yellow phosphorus be accepted as about 8 mg., 666 matches must be consumed to attain a fatal level of the chemical. This computation is speculative, and any similar computations are equally uncertain. From the consumption of a few matches the worst likely effects are emesis and gastritis. Some organic dyes used to color match heads may, after ingestion, lead to methemoglobinemia. Their importance increases if the number of matches ingested is high. With crayons the situation is similar. Two common types exist, namely, the extruded wax crayon and the cast chalk crayons. In the former, stearic acid or paraffin constitutes the wax which is associated with one or more of some thirty coloring agents. Chiefly the colors are aniline types, but some mineral types, such as the chrome-green, containing lead, still may be in use. Since these harmless waxes are little soluble in the alimentary canal, their content of dye, even if harmful, is only scantily released. Brieger[1] lately reported the occurrence in children of a number of instances of severe methemoglobinemia after the ingestion of wax crayons of certain colors, red-orange, orange, yellow and violet. He attaches significance to the chemical paranitraniline as the source of methemoglobinemia. This author recognizes the insolubility and nondigestibility of crayon waxes and experimentally has not been able to leach the dyes from them with such fluids as gastric juice. It was not possible to induce methemoglobinemia in dogs and rabbits after they had been fed wax crayons, but other investigators working with cats detected methemoglobinemia in one third of fasting cats fed red and red-orange crayons. The intravenous introduction of concentrated suspensions of the red dye was without effect. While no explanation of the mechanism of this form of poisoning exists, the actuality of occurrence must be accepted. In the second variety of crayons (chalks) may be found such constituents as plaster of paris, whiting, clay, bentonite, glue, dextrose and at times some waxes together with coloring material, usually aniline dyes but sometimes natural mineral dyes. Until recently, some chalks regularly contained lead compounds and lead poisoning occurred or was suspected. With the exception of the possibility of methemoglobinemia from aniline dyes, the ingestion of any considerable quantity of crayons and chalks manufactured by reputable producers may be expected to result in little more than gastritis. Of greater significance is the possibility of dermatitis, since several of the constituents mentioned, both for matches and crayons, are known skin irritants or sensitizers. The occurrence of silicosis or any other significant pneumoconiosis from prolonged exposure to crayon dust, such as in the schoolroom, is highly improbable.

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[7] Ladd, A. T.; Kellner, A., and Correll, J. W.: Intravenous Detergents in Experimental Atherosclerosis with Special Reference to the Possible Role of Phospholipids, Federation Proc. **8**: 360, 1949.

[8] McGill, H. C.; Parrish, L. E., and Holman, R. L.: Influence of Alloxan Diabetes on Cholesterol Atherosclerosis in the Rabbit, Federation Proc. **8**: 361, 1949.

[9] Ungerleider, H. E.; Gubner, R., and Rodstein, M.: Interrelationships of Cholesterol, Arteriosclerosis, Diabetes and Obesity, Progress report no. 22, Scientific Session, Am. Heart Association, 1949, p. 52.

[10] Chieffi, M., and Kountz, W. R.: A Study of Rate of Oxygen Consumption in Patients with Arterial Degeneration and a Consideration of the Relation of the Metabolic Processes to the Onset of Degeneration, Proc. Am. Soc. Study of Arteriosclerosis, Am. Heart J. **35**: 19, 1948.

[11] Herrmann, G. R.: Cholesterol Levels in Various Diseases and the Effects of Decholesterizing Agents, Texas State J. Med. **42**: 260, 1946.

[11b] Israel, M.: Arteriosclerosis: Clinical Aspects, New York, Davenport Press, Inc., 1948.

[12] Morrison, L. M.: New Methods of Therapy in Cirrhosis of the Liver, J. A. M. A. **134**: 673 (June 21) 1947.

[13] Steiner, A.: Effect of Choline in the Prevention of Experimental Aortic Atherosclerosis, Arch. Path. **45**: 327 (Oct.) 1948.

DIATHERMY IN THE HOME

Attempts to revive interest in home use of diathermy apparatus are being made by the New Diathermy Company, of which the William D. New Company is said to be the exclusive sales agency. Newspaper advertisements and letters to physicians and masseurs in the Chicago area are the first steps. The newspaper advertisement includes the following "Note to Doctors":

> Our purpose in introducing the New Shortwave Diathermy Unit is to provide a service for the Doctor and his patient where diathermy is indicated. Under no circumstances will our unit be sold before proper diagnosis has been obtained from a doctor of the patient's own choosing, or one provided by our company. That is our pledge to the Medical Profession.

This might seem a purely altruistic effort to discourage self diagnosis and self treatment, but printed in a newspaper it invites the patient to put pressure on his physician to prescribe home diathermy. The "Note to Physicians" seems to be an insolent, published assurance that the medical profession will share in the profits from the device. Further promotional literature includes personal letters addressed by the firm to physicians. One of these astonishing communications follows:

> We are about to appoint an examining doctor for the area in which you are located to perform the services covered in the statement "NOTE TO DOCTORS" in the attached newspaper advertisement. This service is provided only through doctors, for which we pay the doctor a fee ranging from $7.00 to $50.00.
>
> If you are interested in handling this work for us, will you please sign the attached card and mail it to us. We will then have an authorized technician get in touch with you to explain patient examination and diagnosis forms, as well as to outline the type of services required and the remuneration involved.

The Council on Physical Medicine and Rehabilitation has repeatedly declined to include home diathermy apparatus in its list of accepted devices. Self treatment with diathermy apparatus should not be encouraged, as was pointed out in The Journal (133:541 [Feb. 22] 1947). The violation of ethics by this kick-back arrangement is clear.

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[1] Brieger, H.: Poisoning Due to Ingestion of Wax Crayons, Am. J. Pub. Health 39:1023 (Aug.) 1949. Jones, J. A., and Brieger, H.: Poisoning Due to Ingestion of Wax Crayons, J. Pediat. 30:422, 1947.

ORGANIZATION SECTION

Official Notes

CONFERENCE OF STATE SECRETARIES AND EDITORS

The annual Conference of State Medical Association Secretaries and Editors will be held in the American Medical Association Building, Chicago, Nov. 3-4, 1949. The committee which has prepared the program for this conference consists of Dr. Douglas W. Macomber, Denver, chairman; Mr. Charles H. Crownhart, Madison, Wis.; Dr. Herman M. Jahr, Omaha; Dr. Frank J. Milloy, Phoenix, Ariz.; Mr. Charles S. Nelson, Columbus, Ohio, and Dr. Wallace M. Yater, Washington, D. C.

PROGRAM

THURSDAY, NOVEMBER 3

Assembly Room—Ninth Floor

9:00 a.m. Registration.

10:00 a.m. Call to Order and Opening Remarks. Douglas W. Macomber, Denver, Scientific Editor, *Rocky Mountain Medical Journal*, and Chairman of Program Committee.

10:05 a.m. Greetings. Louis H. Bauer, Hempstead, N. Y., Chairman of the Board of Trustees of the American Medical Association.

10:15 a.m. Announcements. George F. Lull, Chicago, Secretary and General Manager of the American Medical Association.

10:20 a.m. Making a Speakers Bureau Fulfil Its Purpose. Frank J. Holroyd, Princeton, W. Va., Chairman, Public Relations Committee, West Virginia State Medical Association and Area Chairman for the National Conference of County Medical Society Officers.

10:40 a.m. Discussion Period.

10:50 a.m. How Can State Medical Association Secretaries and Editors Improve Organization Relationships with Hospital Associations? C. Rufus Rorem, Philadelphia, Executive Secretary, Hospital Council of Philadelphia.

11:20 a.m. Discussion Period.

11:40 a.m. Let's Coordinate the Programs of Our National Meetings.

(Four ten minute presentations)

Conference of Presidents and Other Officers of State Medical Associations. John E. Farrell, Providence, R. I., Secretary-Treasurer of the Conference.

Medical Society Executives Conference. James E. Bryan, Trenton, N. J., President of the Conference.

National Conference of County Medical Society Officers. A. M. Mitchell, Terre Haute, Ind., Chairman of the Conference.

Annual Conference of State Medical Association Secretaries and Editors. Joseph Garland, Boston, Editor, *New England Journal of Medicine*.

12:20 p.m. Discussion Period.

12:30 p.m. Luncheon.

2:00 p.m. Office and Personnel Management in the Expanding Headquarters of State Medical Associations. Charles S. Nelson, Columbus, Ohio, Executive Secretary, Ohio State Medical Association.

2:15 p.m. Discussion Period.

2:25 p.m. The "Medical Grand Jury" Plan of Investigating Patient's Dissatisfactions. Harvey T. Sethman, Denver, Executive Secretary, Colorado State Medical Society.

2:40 p.m. Discussion Period.

2:50 p.m. Developing and Maintaining Reader Interest in State Medical Journals. Wilfrid Haughey, Battle Creek, Mich., Editor, *Journal of the Michigan State Medical Society*.

3:10 p.m. Discussion Period.

3:20 p.m. North Carolina's Health Council Demonstration Program. Charlotte Rickman, Lenoir, N. C., Health Education Consultant to the Medical Society of the State of North Carolina and the North Carolina Good Health Association.

3:40 p.m. Discussion Period.

3:50 p.m. Availability and Utilization of Medical Care in America. George W. Bachman, Washington, D. C., Research Senior Staff Member of the Brookings Institution.

4:10 p.m. Discussion Period.

4:20 p.m. Motion Picture: "They Also Serve. The Physician's Responsibility in the Event of a Major Disaster." Ernest B. Howard, Assistant Secretary of the American Medical Association and Acting Secretary, Council on National Emergency Medical Service.

4:40 p.m. Discussion Period. Closing Announcements.

THURSDAY EVENING, NOVEMBER 3

Walnut Room, Bismarck Hotel

6:45 p.m. Dinner for Secretaries and Editors.

8:00 p.m. As Others See Us. Harold M. Camp, Monmouth, Ill., Secretary, Illinois State Medical Society, and Editor, *Illinois Medical Journal*, Presiding.

What's Wrong with Medical Society Secretaries? Walter E. Vest, Huntington, W. Va., Editor, *West Virginia Medical Journal.*

What's Wrong with Medical Editors? Walter P. Anderton, New York, Secretary, Medical Society of the State of New York.

Now That the Shooting is Over! Joseph D. McCarthy, Omaha, Neb., Member of the Council on Medical Service of the American Medical Association.

FRIDAY, NOVEMBER 4

Assembly Room—Ninth Floor

9:30 a.m. Call to Order and Announcements.

9:35 a.m. Journal Income Prospects for 1950: Report from Cooperative Medical Advertising Bureau. Stanley B. Weld, Hartford, Conn., Chairman, Advisory Committee, Cooperative Medical Advertising Bureau, and Alfred J. Jackson, Chicago, Director of the Cooperative Medical Advertising Bureau.

9:50 a.m. Discussion Period.

10:00 a.m. Talking Ourselves Into Trouble. John L. Bach, Chicago, Director of Press Relations, American Medical Association.

10:15 a.m. Management of Radio Relations for State Medical Meetings. Harriet Hester, Chicago, Radio Representative, Bureau of Health Education, American Medical Association.

10:30 a.m. Discussion Period.

10:40 a.m. Technics of Managing a State Legislative Campaign. Charles H. Crownhart, Madison, Wis., Secretary, State Medical Society of Wisconsin.

10:55 a.m. Discussion Period.

11:05 a.m. Technics of Testifying Before Congressional Committees. F. F. Borzell, Philadelphia, Speaker of the House of Delegates of the American Medical Association.

11:20 a.m. DISCUSSION PERIOD.

11:30 a.m. THE BRITISH NATIONAL HEALTH SERVICE: RESULTS TO DATE. John W. McPherrin, New York, Editor, *The American Druggist.*

12:00 M. SAMPLE RECORDINGS OF MR. MCPHERRIN'S INTERVIEWS WITH BRITISH OFFICIALS, PHYSICIANS AND PATIENTS.

(Friday afternoon is left free so that Conference members may have opportunity to acquaint themselves with the American Medical Association headquarters offices and consult department heads.)

Washington Letter

(From a Special Correspondent)

Oct. 3, 1949.

Calendar on Health Legislation Virtually Cleared

Moving speedily and with harmonious bipartisan action, the Senate's docket of national health legislation has been disposed of almost in its entirety. In the final week of September this branch of Congress passed bills authorizing inauguration of a vast program of federal financial support of medical schools; directing U. S. Public Health Service to prepare plans for a national survey of chronic illnesses; establishing two more government institutes in medical research, and providing substantial salary increases for medical, dental, nursing and other professional personnel in the Department of Medicine and Surgery, Veterans Administration. Thus, with the exception of national compulsory health insurance, the only item of prospective legislation of broad significance still pending before the Senate is a bill on child and maternal health, the passage of which at this late date is doubtful.

Previously the House had passed the bill (H.R. 6022) increasing pay of Veterans Administration personnel, on which congressional action is now completed. This is the only health or medical bill of national importance which the House has passed this year. Since the first session of the 81st Congress is drawing to a close, Capitol observers feel that the only major measure fairly certain to be enacted into law is the bill on expansion of the Hill-Burton hospital construction act. If adjournment comes, as is likely, before action on federal aid to medical education, National Science Foundation, school health services, local public health units, extension of federal medical research and other bills already passed by the Senate, these bills are expected to come up for early consideration after the second session convenes in January.

House action on health legislation is being delayed by the absence of Representative Robert Crosser (Dem., Ohio), chairman of the Committee on Interstate and Foreign Commerce. He remained abroad after other members of the committee finished a two week study of government health insurance systems in England, Sweden and other European countries and returned home late in September. Although the subcommittee on health legislation, of which Representative J. Percy Priest (Dem., Tennessee) is chairman, will proceed with consideration of the bills already passed by the Senate, final action by the full committee probably will await Chairman Crosser's return to Washington.

Senate Hearings' Testimony Now in Print

Issued recently by the Senate Committee on Labor and Public Welfare is "National Health Program, 1949," a two volume transcript of testimony presented before the committee last May and June on compulsory health insurance, subsidization of medical education, voluntary prepayment plans and other issues involved in pending legislation. The compendium reveals there were 84 witnesses in all, including spokesmen for the American Medical Association, the American Hospital Association, organized labor, federal agencies, numerous voluntary associations and miscellaneous groups. Copies of the hearings may be obtained, up to the limit of supply, without charge on request to the Senate Committee on Labor and Public Welfare, United States Capitol, Washington 25, D. C.

Coming Medical Meetings

Annual Conference of State Secretaries and Editors, Chicago, A. M. A. Building, Nov. 3-4. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Academy of Pediatrics, San Francisco, Nov. 14-17. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Chicago, Palmer House, Oct. 13. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 5-7. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 6-9. Dr. Frederick J. Brady, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Life Insurance Medical Directors of America, New York, Hotel Statler, Oct. 13-14. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Nov. 10-12. Col. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Central Society for Clinical Research, Chicago, Drake Hotel, Nov. 4-5. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

International College of Surgeons, United States Chapter, Atlantic City, Haddon Hall, Nov. 7-12. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10, Secretary.

Inter-State Post Graduate Medical Association of North America (International Medical Assembly), Philadelphia, Oct. 31-Nov. 3. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

National Gastroenterological Association, Boston, Hotel Somerset, Oct. 24-26. Dr. Sigurd W. Johnsen, 1818 Broadway, New York 23, Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 30-Nov. 1. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Post Graduate Medical Assembly of South Texas, Houston, Nov. 29-Dec. 1. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Secretary.

Southern Medical Association, Cincinnati, Nov. 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Psychiatric Association, New Orleans, Nov. 27-29. Dr. Newdigate M. Owensby, 384 Peachtree St., N.E., Atlanta, Georgia, Secretary.

Southwestern Medical Association, Albuquerque, New Mexico, Nov. 9-12. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Texas, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Western Surgical Association, Santa Barbara, Calif., Nov.29-Dec. 2. Dr. Warren H. Cole, 1853 W. Polk St., Chicago 12, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15. Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

GOVERNMENT SERVICES

NAVY

SHORT COURSE ON RADIOACTIVE ISOTOPES

One hundred and fifty reserve medical and dental officers and several Royal Canadian reserve medical officers attended a 5 day course in Medical Aspects of Special Weapons and Radioactive Isotopes, which began September 26 at Bethesda, Md. Capt. Melville J. Aston of the Naval Medical School conducted the course. The teaching staff included civilian consultants of the Navy, representatives of the Atomic Energy Commission and officers of the U. S. Public Health Service, Army and Navy, who are proficient in the field of atomic energy or specialize in the biologic and pathologic effects of ionizing radiation. Visits were made to the cyclotron at the Carnegie Institute at Chevy Chase, the National Cancer Institute, the National Institutes of Health and the Naval Medical Research Institute.

Civilian scientists who spoke were Drs. Charles F. Geschickter, J. B. Trunnell, Herbert Friedman, Philip H. Abelson, Karl Z. Morgan, Howard Andrews and R. E. Lapp. Frederick Reinhardt, of the State Department, gave one of the featured essays.

POSTGRADUATE INSTRUCTION

The following medical officers have been nominated for postgraduate courses of instruction as indicated:

Comdr. William H. Druckemiller, Sunbury, Pa., to a residency in neurosurgery, Kings County Hospital, New York.

Lieut. Charles D. Adams, Augusta, Ga., to a residency in dermatology and syphilology, Naval Hospital, St. Albans, N. Y.

Lieut. (jg) David C. Beer, Denver, to a residency in obstetrics and gynecology, Naval Hospital, Oakland, Calif.

Lieut. (jg) David B. Carmichael Jr., Orange, Calif., to instruction in cardiology, Massachusetts General Hospital, Boston.

Lieut. (jg) Frank J. Morgan Jr., Marion, Miss., to instruction in aviation medicine, Naval School of Aviation Medicine and Research, Pensacola, Fla.

MONTHLY MEETING

The first of the current series of guest lectures at the Naval Medical School, Bethesda, Md., was presented September 30 by Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research, New York, who spoke on "The Relationship and Reactions of Host Cells to Viruses and Rickettsiae." These meetings are open to members of the local medical societies and faculties of medical schools and to medical officers of the Army, Air Force, Navy, Public Health and Veterans Administration. Refreshments are served following the lectures.

NEW REGULAR OFFICERS

The following active reserve medical officers have recently accepted appointments in the regular Navy Medical Corps:

Lieut. (jg) David C. Beer of Denver.
Lieut. (jg) Ellsworth R. Browneller of Williamsport, Pa.
Lieut. (jg) Robert F. Dykhuizen of Indianapolis.
Lieut. (jg) Thomas S. Ely of Bethesda, Md.
Lieut. (jg) Larry J. Hines of McKinney, Texas.
Lieut. (jg) Francis J. Lineham Jr. of Stamford, Conn.
Lieut. (jg) Wolfram G. Locher of Chardon, Ohio.
Lieut. (jg) Deane E. McLeod of Seattle.
Lieut. (jg) Vernon J. Merkle of Monroe, Wash.
Lieut. (jg) Delmer J. Pascoe of Glendale, Calif.
Lieut. (jg) James L. Pollock Jr. of Denver.
Lieut. (jg) Jarvis H. Post of Greensburg, Pa.
Lieut. (jg) Thomas W. D. Smith of Murray, Utah.

PERSONAL

Rear Admiral Fredric L. Conklin, who retired September 30 after thirty-five years' service, will become head of the county hospital in his home state at Berrien Center, Mich.

Lieut. Comdr. Richard E. Kelley (MC, USNR) and Lieut. (jg) John W. Grover (MC, USNR) have been nominated for active duty at their own request. Dr. Kelley will pursue a course of instruction in dermatology and syphilology, University of Pennsylvania Graduate School of Medicine, Philadelphia, and Dr. Grover will be assigned to the Naval Hospital, Great Lakes, Ill., for duty.

AWARDS AND COMMENDATIONS

Lieut. Comdr. Ralph Christy Jr.

The Legion of Merit has been awarded to Lieut. Comdr. Ralph Lawrence Christy Jr., M.C., flight surgeon. The citation reads in part as follows:

> For exceptionally meritorious conduct in the performance of outstanding services to the Government of the United States while carrying out research in the development of anti-blackout equipment for use in aircraft and the indoctrination of fleet pilots in the use of such equipment and, in addition, as Flight Surgeon attached to Commander Fleet Air West Coast from November 1944 to November 1945. Lt. Commander Christy repeatedly exposed himself to the force of high acceleration and pressure altitudes of over 50,000 feet in developing anti-blackout equipment which gave fleet pilots an advantage over the enemy in aerial combat; he also served as the Medical Technical Officer for the design and development of the world's largest Human Centrifuge, which is designed to permit the solution of problems in high speed and supersonic flight and, in particular, those of emergency escape from supersonic aircraft. His professional skill, resourcefulness and untiring devotion to duty reflect great credit on Lt. Commander Christy and the United States Naval Service.

AIR FORCE

FIVE NEW GENERALS

The Surgeon General's Office, U. S. Air Force, announces the promotion of Harry G. Armstrong, deputy surgeon general, and George R. Kennebeck, chief of the Dental Service, to major generals, and William H. Powell Jr., director of Professional Services, Albert H. Schwichtenberg, director of Plans and Hospitalization, and Dan C. Ogle, special assistant to the Surgeon General, to brigadier generals. The promotions were made following a transfer order by Louis L. Johnson, Secretary of Defense, which gave the Air Force Medical Service responsibilities formerly assumed by the Army. The U. S. Air Force Medical Service, which came into being July 1, 1949, had until then been known as Office of the Air Surgeon and had been under Army control.

MEDICAL OFFICERS CERTIFIED BY SPECIALTY BOARDS

The U. S. Air Force announces that the following medical officers have been certified recently by the specialty boards indicated: Col. Aubrey L. Jennings and Col. Earl Maxwell, American Board of Ophthalmology, and Col. John R. McBride, American Board of Internal Medicine.

APPOINT TWENTY CIVILIAN CONSULTANTS

The Surgeon General of the Air Force, Major Gen. Malcolm C. Grow, has announced the appointment of twenty civilian physicians representing different fields of medicine as consultants to the Air Force Medical Service.

The consultants appointed, together with their respective specialties, are:

Conrad Berens, New York, ophthalmology.

Paul A. Campbell, Chicago; Samuel J. Crowe, Baltimore, and William A. Morgan, Washington, D. C., otolaryngology.

R. Lee Clark, Houston, Texas, and Alton Oschsner, New Orleans, surgery.

Alfred R. Shands Jr., Washington, D. C., orthopedic surgery.

Robert E. Moran, Washington, D. C., plastic surgery.

Cortez F. Enloe, Manhausett, L. I., N. Y.; Elmer L. Henderson, Louisville, Ky.; William P. Holbrook, Tucson, Ariz.; Philip T. Kniess, Columbus, Ohio, and Russel V. Lee, Palo Alto, Calif., internal medicine.

Herbert B. Wright, Cleveland, urology.

Frank Fremont-Smith, Massapeque, L. I., N. Y.; Donald W. Hastings, Minneapolis, and John M. Murray, Boston, neuropsychiatry.

Charles E. Kossman, New York, cardiology.

W. Randolph Lovelace, Albuquerque, N. Mex., aviation medicine.

Howard A. Rusk, New York, physical medicine.

VETERANS ADMINISTRATION

ORTHOPEDIC AND PROSTHETIC APPLIANCES CLINICS

The Department of Medicine and Surgery announces the establishment of twenty-four Orthopedic and Prosthetic Appliances clinics in the following VA regional offices and centers:

The purpose of these clinics is to provide the means whereby seriously disabled VA beneficiaries requiring artificial limbs, orthopedic braces or orthopedic shoes may be given the best possible advice and treatment in the selection and fitting of prosthetic appliances and training in the use thereof. The clinics will bring the orthopedic surgeon, the physiatrist, the physical therapist, the prosthetic representative and the prosthetic manufacturer together to work as a team in solving the problems of seriously disabled veterans. The psychiatrist, as well as occupational and corrective therapists and other specialists, may be added to the team for cases in which their services are needed.

Location	Consultant or Attending Physician
Atlanta, Ga.	Dr. Robert P. Kelly
Boston, Mass.	Dr. Eugene Record
Chicago, Ill.	Dr. Clinton Compere
Dallas, Texas	Dr. Felix L. Butte
Detroit, Mich.	Dr. John Pendy
New Orleans, La.	Dr. Rufus Alldredge
Kansas City, Mo.	Dr. Richard H. Kiene
Los Angeles, Calif.	Dr. Paul E. McMaster
New York, N. Y.	Dr. Jerome Lawrence
Philadelphia, Pa.	Dr. J. Hamilton Allen
Pittsburgh, Pa.	Dr. John Donaldson
Portland, Oregon	Dr. Faulkner A. Short
San Antonio, Texas	Dr. M. H. Morris
San Francisco, Calif.	Dr. Charles Bechtol
St. Louis, Mo.	Dr. Edward C. Holscher
Seattle, Wash.	Dr. Ernest Burgess
Salt Lake City, Utah	Dr. Paul A. Pemberton
Louisville, Ky.	Dr. W. M. Ewing
Washington, D. C.	Dr. Everett J. Gordon
Cleveland, Ohio	Dr. W. H. McGaw
Honolulu, T. H.	Dr. S. F. Stewart
Denver, Colo.	Dr. Atha Thomas
San Diego, Calif.	Dr. Francis E. West
St. Paul, Minn., VA Center	Dr. Richard H. Jones

REPORT ON RADIOISOTOPES

The Central Advisory Committee on radioisotopes held its third annual meeting in Washington, D. C., September 26. Dr. George Lyon, chief of the Radioisotope Section of the medical service, reported that the Veterans Administration has established research units in twelve hospitals in developing its radioisotope program and that four new units will be established during the current fiscal year. Plans have been approved for radioisotope units in a number of hospitals now under construction. Dr. Lyon stated that the Division of Medicine and Biology of the Atomic Energy Commission and the Isotopes Branch at Oak Ridge, Tenn., had closely cooperated with the VA radioistope program. The advisory committee at this meeting discussed the individual reports of the various research units and the relation of these units to the VA education and training program. The committee members present at the meeting were:

Dr. Shields Warren, chief, Division of Biology and Medicine, Atomic Energy Commission.

Dr. Stafford Warren, dean, School of Medicine, University of California at Los Angeles.

Dr. Hymer Friedell, professor of radiology, Western Reserve University, School of Medicine, Cleveland.

Dr. Hugh Morgan, professor of medicine, Vanderbilt University School of Medicine, Nashville, Tenn.

Dr. Perrin H. Long, professor of preventive medicine, Johns Hopkins University School of Medicine, Baltimore.

PERSONAL

Dr. Herbert Kent, formerly fellow in physical medicine and rehabilitation, New York University-Bellevue Medical Center and the National Foundation for Infantile Paralysis, has been appointed chief of physical medicine and rehabilitation at the Veterans Administration Hospital, Indianapolis.

PUBLIC HEALTH SERVICE

THE NATION'S NEEDS FOR HOSPITALS

The Division of Hospital Facilities of the Public Health Service has published a manual which summarizes data submitted by the states up to Dec. 31, 1948, under the Hospital Survey and Construction Act. There is a map for each state showing plans for general hospital service regions and areas, existing facilities and those planned in order to provide the necessary facilities in each region. Another appendix consists of state tables which show for each general hospital service area the population; number of existing facilities and beds; number classified acceptable or nonacceptable; estimated and additional facilities and beds needed; percentage of population residing in places of less than 2,500 persons; per capita income, and priority rating of the area. Also described are the total beds and additional beds and facilities needed in each state and for the nation. Tables show the number of existing beds, additional number required and total beds needed in each state for general, mental, tuberculosis and chronic disease hospitals. Methods used by the states in planning their hospital construction programs are also described.

Copies of this manual may be obtained by writing to the Public Health Service, Washington 25, D .C., Attention: Division of Hospital Facilities.

CLOSE PITTSBURGH AND BUFFALO MARINE HOSPITALS

The U. S. Marine Hospital at Pittsburgh and at Buffalo, N. Y. will be closed as soon as possible in the interest of economy and of providing better care to merchant seamen and certain other groups. This action followed a recommendation by the Surgeon General, Leonard A. Scheele, after a study by a review board appointed by the Surgeon General. The decrease in the number of patients in the area entitled to medical care in this hospital did not warrant the expense of maintaining the hospital. Arrangements have been made to continue to provide adequate medical care for the public health service patients in these areas.

MALARIA INVESTIGATION STATIONS

The Communicable Disease Center of the U. S. Public Health Service at Atlanta, Ga., has established malaria investigation stations in three areas representative of the principal regions where malaria formerly was highly prevalent. One station is located at Helena, Ark., another in Baker County near Newton, Ga., and the third at Manning, S. C., near the Santee-Cooper Reservoir, the last station being operated cooperatively by the state of South Carolina and the Communicable Disease Center. The activities of these three stations are designed to determine the amount of malaria present in those areas, the abundance of Anopheles mosquitoes, the blood-feeding habits of local Anopheles species, influence of the climate and other factors on the mosquitoes and problems of Anopheles biology and malaria transmission. Dr. George H. Bradley is chief of the entomology division of the Communicable Disease Center with headquarters at Newton, Ga.

EXAMINATION FOR MEDICAL OFFICERS

A competitive examination will be held Jan. 9-11, 1950, for the appointment of medical officers in the Regular Corps of the Public Health Service. The examinations will be held at a number of places throughout the United States for appointments in the grades of assistant surgeon and senior assistant surgeon. Information and application forms may be obtained from the Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers. Applications must be received by Dec. 12, 1949.

PERSONAL

Dr. Alexander D. Langmuir, formerly associate professor of epidemiology, Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been appointed chief of the epidemiology division of the Communicable Disease Center at Atlanta.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

Changes in University Faculty.—The Medical College of Alabama at University has announced that Drs. James S. McLester, professor of medicine, James M. Mason, professor of surgery, and Stuart Graves, director of admissions, were retired during the past summer by reason of age. Dr. William H. Riser Jr., associate professor of medicine, has been appointed acting professor and chief of the department of medicine. Dr. Riser is a graduate of Emory University School of Medicine, Atlanta, 1938. Joseph K. Cline, Ph.D., has been appointed professor and chief of the department of experimental biochemistry and cancer research. He heads the newly created cancer research laboratory installed at a cost of over $100,000, received from the National Cancer Institute and the American Cancer Society. Dr. Cline received his masters and Ph.D. degrees from Johns Hopkins University, Baltimore, 1930 and 1934, and has been a research chemist for Merck and Company and Bell Telephone Laboratories. He has been on the faculty of the University of Texas School of Medicine, Galveston, since 1940 and has been director of the Cancer Research Laboratory there.

ILLINOIS

District Conference at Mount Vernon.—A graduate conference has been arranged for the Ninth Councilor District at the Emmerson Hotel, Mount Vernon, for the afternoon of October 26, with Dr. Charles O. Lane, West Frankfort, councilor of the district, presiding. Chicago speakers include:

Harry M. Hedge, Dermatology as Seen by the General Practitioner.
Archibald L. Hoyne, Poliomyelitis.
Robert S. Berghoff, Coronary Disease.
Harold M. Camp, The Fight Is Not Over.
Eugene A. Hamilton, Fundamental Principles in the Care of Fractures.
Charles D. Krause, Threatened Abortion.

After dinner Dr. Walter D. Stevenson, Quincy, president of the Illinois State Medical Society, will discuss society activities and present a paper on "Squint, a Medical and Economic Problem." The program was arranged through the Postgraduate Education Committee of the Illinois State Medical Society, of which Dr. Berghoff is chairman and Dr. George A. Hellmuth, Chicago, vice chairman.

Chicago

Pusey Memorial Lecture.—The third William Allen Pusey Memorial Lecture of the Institute of Medicine of Chicago will be delivered at the Palmer House, October 28 at 8 p.m. at a joint meeting with the Chicago Society of Internal Medicine. Dr. Walsh McDermott, associate professor of medicine, Cornell University Medical College, New York, will speak on "Antimicrobial Therapy."

Society News.—The North Side Branch of the Chicago Medical Society at its regular meeting October 27 at the Drake Hotel, 8 p. m., will be addressed by Dr. Charles L. Buxton, Columbia University, N. Y., who will speak on "Etiology and Therapy of Abnormal Uterine Bleeding," and Dr. Robert S. Hotchkiss of New York University on "Types of Hypogonadism in the Male and Their Treatment."——The Chicago Society of Allergy has announced the following officers for the forthcoming year: Drs. Morris A. Kaplan, president; Townsend B. Friedman, president-elect, and Theron G. Randolph, secretary-treasurer.

IOWA

Medical, Press and Radio Conference.—The Iowa State Medical Association held a medical, press and radio conference in Des Moines September 23. A panel discussion was held on "Mutual Interests of the Press, Radio and the Practice of Medicine," and editors of Des Moines and Waverly newspapers gave the point of view of city and rural editors. At the evening meeting Mr. William A. Richardson, Rutherford, N. J., was invited to speak on "First Year of the British National Health Service."

Drs. Millikan and Hardin Resign.—Drs. Clark H. Millikan, assistant professor of neurology, and Robert C. Hardin, assistant professor of internal medicine, have resigned from the faculty of the State University of Iowa College of Medicine. Dr. Millikan, who has been with the university since 1941, will become a consultant in neurology to the Mayo Clinic, Rochester, Minn., and assistant professor of neurology at the Mayo Foundation of the University of Minnesota Graduate School of Medicine. Dr. Hardin has accepted a position as medical director of the American Red Cross Blood Transfusion Program for the Connecticut region. He has been an assistant professor at the University since 1946.

MICHIGAN

New Detroit Health Officer.—Dr. Joseph G. Molner, associate professor of preventive medicine and public health, Wayne University College of Medicine, Detroit, has been named Detroit Health commissioner, after having been with the Department of Health since 1927 and deputy commissioner since 1938. He succeeds Dr. Bruce H. Douglas, also a Wayne University faculty member, who was fatally injured in an automobile accident in August.

Cancer Conference.—The first Michigan Cancer Conference, sponsored by the State Medical Society, State Department of Health and the Michigan Division of the American Cancer Society, will be held at the Hotel Olds, Lansing, October 11, beginning at 10:30 a. m. Invitations have been sent to medical, dental and nursing groups and to all lay health-minded organizations of the state, to news organizations and to other groups. The cancer program in Michigan will be discussed from the standpoint of providing facilities throughout the state for the early diagnosis of cancer.

MISSOURI

General Practitioners Seminar.—A postgraduate seminar has been arranged by the staff of the Washington University School of Medicine, St. Louis, in cooperation with the Missouri Academy of General Practice. It will be held each Wednesday night at Fayette beginning October 12 and continuing through November 16. Two thirty minute lectures will follow a dinner. There are no fees. Graduates of recognized medical schools are invited.

MONTANA

Dr. Ralph R. Parker Dies.—Ralph R. Parker, Ph.D., Hamilton, co-discoverer of a vaccine for Rocky Mountain spotted fever and director since 1928 of the Rocky Mountain Laboratory of the National Institutes of Health, died of heart disease on September 4 at Hamilton. Dr. Parker began his work in this field in 1916 in a cabin with one assistant. At the time of his death he directed a staff of 154 and made his headquarters in the Rocky Mountain Laboratory. Born in Malden, Mass., Feb. 23, 1888, Dr. Parker received his Bachelor of Science degree in 1912 from Massachusetts State College, which later made him a Master of Science, a Doctor of Philosophy and an honorary Doctor of Laws. He received his honorary Doctor of Science degree from Montana State University. After six years, 1915-1921, as an assistant entomologist with the Montana State Board of Entomology, he entered the U. S. Public Health Service and with Dr. Roscoe R. Spencer started the Rocky Mountain Laboratory in 1922 in an abandoned school house in Hamilton. Two years later, with Dr. Parker's help, Dr. Spencer succeeded in producing a vaccine from the infected tissues of the wood tick. The Spencer-Parker vaccine was the first ever developed that proved effective against any rickettsial disease. In an improved form it remains the standard preventive in tick areas.

NEBRASKA

Annual Mid-West Meeting.—The Omaha Mid-West Clinical Society will hold its annual assembly October 24-28 with headquarters at the Hotel Paxton, Omaha, under the presidency of Dr. Warren Thompson. Visiting lecturers include:

Max M. Strumia, Bryn Mawr, Pa., Use of Isotopes and Other Therapy in Blood Dyscrasias.
Granville A. Bennett, Chicago, Diagnosis of Certain Neoplasms of Bone.
Fremont A. Chandler, Chicago, Spinal Deformities and Their Treatment.
Louis G. Herrmann, Cincinnati, Nonmalignant Surgical Lesions of the Colon.
Lauren H. Smith, Philadelphia, Indications and Advantages of Hospitalization of the Psychoneurotic.
Jerome W. Conn, Ann Arbor, Mich., The Multiple Activities of the Adrenal Cortex in Man—Their Relation to Disease.
John Joseph Shea, Memphis, Tenn., Headache and Its Treatment.
James Barrett Brown, St. Louis, Surgical Management of Radiation Burns.
Willard R. Cooke, Galveston, Texas, Functional Disorders Encountered in Gynecologic Practice.
Wilburt C. Davison, Durham, N. C., Differential Diagnosis of Abdominal Pain in Infants and Children.
Edgar Burns, New Orleans, Diagnosis and Treatment of Common Bladder and Urethral Lesions in the Female.
Miss Leone Baxter, Chicago, Progress Report on the National Education Campaign.
Mr. Clem Whitaker, Chicago, Socialized Medicine Is Not Inevitable—and Why!
Theodore L. Squier, Milwaukee, Clinical Food Allergy and Pseudo Food Allergy.
Frederick W. Wittich, Minneapolis, Treatment of Allergies.
J. Harvey Black, Dallas, Texas, Treatment of Asthma.

NEW YORK

Postgraduate Instruction.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged the following postgraduate lectures for component societies: Ontario County Medical Society will hear Dr. John C. McCauley Jr., New York, speak on "Rehabilitation of the Poliomyelitis Patient" at 6 p. m. October 11 at the Canandaigua Hotel, Geneva. The Fulton County Medical Society meeting at the Hotel Johnstown in Johnstown October 20 at 9 p. m. will be addressed by Dr. Pelham Glasier, Albany, on "Cancer of the Colon."

New York City

Weekly Gastroenterologic Conferences.—The weekly gastroenterologic conferences at Bellevue Hospital will be resumed Monday, October 10 at 3:30 p. m., in the G 6 Amphitheatre, under the supervision of Dr. Jacob Buckstein. As in previous years these conferences will consist of a clinical, pathological and radiographic presentation of the gastrointestinal cases that have come to operation or autopsy.

New Members of Hospital Council.—The Hospital Council of Greater New York has announced the election of four new members to the board of directors. They are Dr. Stanhope Bayne-Jones, president of the Joliet Administrative Board of the New York Hospital-Cornell Medical Center; Hon. Joseph V. McKee, commissioner of commerce for New York City; Edward Neimeth, president of Maimonides Hospital in Brooklyn, and Gayer G. Dominick, president of the Roosevelt Hospital in this city. The Hospital Council of Greater New York is a nonprofit organization incorporated to coordinate and improve the hospital and health services of New York City and to plan the development of these services in relation to community needs.

University Names Four Department Heads.—New York Medical College, Flower and Fifth Avenue Hospitals, has promoted Dr. Francis D. Speer, assistant professor of pathology, to professor of pathology and clinical pathologist and director of the department. He succeeds Dr. George K. Higgins, who has resigned. Dr. Speer has been on the faculty of the college since 1934. He has also been director of the laboratory on clinical pathology.

Dr. Thomas J. Kirwin of the James Buchanan Brady Foundation of New York Hospital has been appointed professor of neurology and director of the department succeeding Dr. Sprague Carleton, who has been appointed professor of graduate neurology.

The newly appointed director of the department of pediatrics is Dr. Lawrence B. Slobody, who has been acting director of the department and attendant pediatrician at Flower and Fifth Avenue Hospitals and of the Metropolitan Hospital at Welfare Island. He is also chief of the Frederick S. Wheeler Laboratory for nutritional research.

A new department, the department of physiology and pharmacology, has been established under the direction of James W. Benjamin, Ph.D., who was appointed professor of functional anatomy and director of the department of physiology and pharmacology.

OHIO

Lectures on Emergency and General Practice.—The Society of General Physicians of Cincinnati in collaboration with the University of Cincinnati College of Medicine is offering a seminar for general practitioners October 4-27 in room 110 of the College of Medicine in "Emergencies in General Practice." The subject lectures held from 10 to 12 a. m. are:

Oct. 4, Management of Emergencies in Infants; Acute Infections of the Respiratory Tract.
Oct. 6, Cardiovascular Emergencies.
Oct. 11, Gastrointestinal Emergencies.
Oct. 13, Obstetric Emergencies—Antepartum and Postpartum Hemorrhage.
Oct. 18, Acute Endocrine Disturbances; Emergencies in Dermatology.
Oct. 20, Medical Thoracic Emergencies.
Oct. 25, Neurologic Emergencies; Orthopedic Emergencies.
Oct. 27, Common Poisons; Emergencies of the Eye.

Psychosomatic Ward Opened.—A new psychosomatic ward has been opened at Cincinnati General Hospital. Professional services will be provided by the local university College of Medicine's departments of psychiatry and internal medicine. Services of the college's other departments will be used when patients have illnesses of the sort usually treated by members of such departments. The new ward will aid in training medical students, interns, hospital residents and general practitioners and in furthering research, all in the field of psychosomatic medicine. Dr. Maurice Levine, head of the university's psychiatry department, also a member of the society's council, and Dr. Marion A. Blankenhorn, head of the university's internal medicine department, will be directors of the new ward.

OKLAHOMA

Annual Oklahoma Fall Conference.—The Oklahoma City Clinical Society will hold its annual fall conference and postgraduate assembly October 24-27 with headquarters at the Oklahoma Biltmore Hotel. Visiting lecturers include:

John M. Waugh, Rochester, Minn., Peptic Ulcer—Indications for Various Surgical Procedures.
Joseph B. Vander Veer, Philadelphia, Anticoagulant Therapy in Thromboembolic Diseases.
Francis W. Lynch, St. Paul, The Treatment of Acne.
Ralph K. Ghormley, Rochester, Minn., Painful Hips in Adults—Prevention and Treatment.
Joseph S. D'Antoni, New Orleans, Brucellosis.
M. Digby Leigh, Vancouver, B. C., Canada, Anesthesiology Today.
Carl A. Moyer, Dallas, Texas, Recent Advances in the Chemical Suppurative Therapy of Trauma, with Special Reference to Burns and Peritonitis.
Willard M. Allen, St. Louis, Functional Uterine Bleeding.
J. Ross Veal, Washington, D. C., Impaired Arterial Circulation.
John L. Parks, Washington, D. C., Lesions of the Vulva.
Horace L. Hodes, Baltimore, The Etiology of Epidemic Diarrhea of the Newborn.
Louis H. Newburgh, Ann Arbor, Mich., The Treatment of Edema.
John F. Holt, Ann Arbor, Mich., The Hand—An Index of Systemic Disease.
Lauren V. Ackerman, St. Louis, Lung Tumors—The Correlation of Their Pathologic Behavior with Their Clinical Behavior.
Arno E. Town, Philadelphia, Glaucoma: Mechanism, Types and Medical Treatment.
Dalton K. Rose, St. Louis, Hematuria.

In addition to the general assemblies, postgraduate symposiums will be given at the Hotel Biltmore and round table lunches will be held. The Oklahoma County Medical Society banquet, Monday evening at 7, will honor Dr. Ernest E. Irons, President, American Medical Association, Chicago, who will speak on "Welfare and Medicine." Registration fee, which includes all scientific and social activities, is $15.

OREGON

State Medical Meeting. — The Oregon State Medical Society will hold its annual meeting at the Elks Club, Eugene, October 12-14. The program includes the following out of state speakers:

Hugh T. Jones, Los Angeles, Geriatric Principles in Bone Surgery.
Verne R. Mason, Beverly Hills, Calif., Recent Contributions to the Modern Treatment of Heart Failure.
Albert G. Bower, Pasadena, Calif., Antibiotic and Sulfonamide Drugs.
Edward C. Pallette, Los Angeles, Peptic Ulcer, Its Surgical Treatment.

Panel discussions will be held at the Hotel Eugene on Poliomyelitis, Geriatric Orthopedics and Peptic Ulcer. On Friday at the annual banquet the address will be given by Hon. Ralph W. Gwinn, on "Socialism—American Variety."

GENERAL

Diabetes Association Appoints Executive Director.—The American Diabetes Association employed August 1 its first executive director, Mr. J. Richard Connelly, formerly assistant secretary of the Medical Society of the District of Columbia. He will also be business manager of the association's magazine, *ADA Forecast.*

Special Society Meetings.—At the recent meeting of the Executive Committee of the Southern Branch of the American Public Health Association, the next annual meeting was set for April 27-29, 1950 at Birmingham, Ala.——The American Society for Pharmacology and Experimental Therapeutics will hold its first interim meeting in Indianapolis November 17-19. The scientific sessions will be held at the Indiana University Medical Center.

Public Health Meeting. — The annual meeting of the American Public Health Association and its related organizations will be held October 24-28 in New York. Meetings will be at the hotels Statler and New Yorker except as otherwise noted in the program. The meetings will be divided into sections. The reception to the president of the association will be held Monday at 5 p. m. at the Hotel Statler. There will be technical exhibits.

General Marshall Heads Red Cross.—General George C. Marshall, former army chief of staff and secretary of state, was appointed by President Truman as president of the American Red Cross, effective October 1. General Marshall succeeds Basil O'Connor, who has headed the Red Cross since 1944.

General Marshall has been in retirement since January, following his service as secretary of state. Mr. O'Connor requested relief from this post to return to private affairs.

Symposium on the Nasal Septum.—The seventh annual scientific session of the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Inc., will be held in Chicago at the Palmer House, October 13, under the presidency of Dr. Samuel F. Kelley, New York. The scientific program will comprise a symposium on surgery of the nasal septum, the various phases of the subject being presented by Drs. Francis W. White, New York; Samuel Salinger, Chicago; Samuel Fomon, New York, and John D. Kernan, New York. A dinner will be held at 6 p. m. in honor of Dr. White.

Courses in Anesthesiology for General Practitioners.—The American Society of Anesthesiologists is sponsoring a program of refresher courses in anesthesiology for general practitioners, particularly those in rural areas. More than seventy training centers have been established, each being directed by a qualified and experienced anesthesiologist. All courses are individualized both as to scope and period of instruction to fit the needs and available time of the applicant. Courses are furnished as a service and in nearly all cases without fees. Participation is available to all doctors of medicine. Inquiries should be addressed to Stevens J. Martin, M.D., Chairman, Committee on Medical Schools and Post Graduate Education, St. Francis Hospital, Hartford 5, Conn.

Southwest Regional Cancer Conference. — The third annual Southwest Regional Cancer Conference will be held in Fort Worth, Texas, November 9, at the Blackstone Hotel, under the auspices of the Tarrant County Medical Society and the Tarrant County Unit, American Cancer Society. Guest speakers at the conference will include Drs. Merton M. Minter, internist, San Antonio; R. A. Willis, pathologist, London; Stanley P. Reimann, research pathologist, Philadelphia; Norman Treves, surgeon, New York; Dr. Danely P. Slaughter, surgeon, Chicago, and Hyman S. Sugar, ophthalmologist, Detroit. The one day conference will consist of morning and afternoon sessions, a clinical luncheon with an open forum question and answer period and a public meeting in the evening. There will be no registration fee. Information may be obtained by writing the Tarrant County Medical Society, 209 Medical Arts Building, Fort Worth 2, Texas.

"Circulation," New Official Organ of American Heart Association.—A new official monthly publication of the American Heart Association, to be known as *Circulation—The Journal of the American Heart Association,* will begin publication in January 1950, according to a joint announcement by Dr. Harold M. Marvin, New Haven, Conn., president of the association, and Mr. Henry M. Stratton, president of Grune & Stratton, publishers. The American Heart Association will terminate sponsorship of the monthly *American Heart Journal,* the association's official organ for nineteen years, with the December 1949 issue. Its present circulation, all within the medical profession, is 9,000 copies. "The needs of the members of the American Heart Association, and of the medical profession in general, require a larger official journal to keep pace with advances in the field of cardiovascular diseases," the announcement states. *Circulation* will be published in a larger format, allowing for the printing of 25 per cent more material in each issue, to give a balanced account of all phases of scientific heart information for the specialist, clinician and investigator. Dr. Thomas M. McMillan will continue as editor in chief. The annual subscription price will be $12 ($13 outside the United States).

Life Insurance Research Grants and Fellowships.—Applications for 1950 grants in aid of research on cardiovascular problems will be received by the Life Insurance Medical Research Fund up to Jan. 1, 1950. Support is available for physiologic, biochemical and pathologic research which bears on cardiovascular problems, as well as for clinical investigation in this field. Preference is given to fundamental research. It is expected that about $550,000 will be awarded for these grants. Applications for postgraduate fellowships for training in research in 1950-1951 will also be received by this fund up to Jan. 1, 1950. Preference is given to candidates who wish to work in the broad field of cardiovascular function or disease and to candidates who wish to work in institutions other than those in which they have obtained most of their experience. A doctor's degree (M.D. or Ph.D.) or the equivalent is required. The annual stipend varies, as a rule between $3,000 and $4,000, with larger amounts in special cases. At least twelve postgraduate fellowships will be available. New grants and fellowships will become available July 1, 1950. Application blanks may be secured from the Scientific Director, Life Insurance Medical Research Fund, 2 East 103d Street, New York 29, N. Y.

Prevalence of Poliomyelitis. — Reports of cases of poliomyelitis for the period indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

Division and State	Week Ended			Jan. 1 to		Total ‡	
	Sept. 24, 1949	Sept. 25, 1948	Median	Sept. 24, 1949	Sept. 25, 1948	March 19 to Sept. 24, 1949	March 20 to Sept. 25, 1948
New England States:							
Maine	24	2	2	382	31	382	31
New Hampshire	13	2	2	160	16	160	16
Vermont	2	2	2	92	17	90	16
Massachusetts	143	11	28	1,384	138	1,384	135
Rhode Island	13	3	3	107	5	107	5
Connecticut	32	6	11	422	80	419	79
Middle Atlantic States:							
New York	288	104	110	4,091	915	4,071	879
New Jersey	91	81	40	1,026	523	990	516
Pennsylvania	59	68	48	547	504	537	493
East North Central States:							
Ohio	125	58	58	1,341	825	1,335	816
Indiana	35	25	20	856	293	846	286
Illinois	135	94	93	2,326	709	2,310	702
Michigan	*170*	*64*	*69*	2,157	461	2,137	455
Wisconsin	87	40	40	749	324	735	324
West North Central States:							
Minnesota	121	116	45	1,478	789	1,439	781
Iowa	44	91*	14	876†	658*	163	645
Missouri	54	31	15	1,107	209	1,096	209
North Dakota	16	9	3	415	94	411	94
South Dakota	18	23	1	289	181	267	181
Nebraska	51	58	16	452	479	439	474
Kansas	32	26	8	577	227	551	224
South Atlantic States:							
Delaware	..	2	4	38	114	36	113
Maryland	18	6*	9	47†	59*	138†	58
District of Columbia	3	7	7	70	92	69	92
Virginia	13	39	19	250	415	240	413
West Virginia	20	5	5	292	121	285	116
North Carolina	7	85*	23	180	2,167*	153	2,143
South Carolina	5	14	4	86	309	73	301
Georgia	4	9	5	147	179	139	178
Florida	13	6	6	194	201	173	184
East South Central States:							
Kentucky	47	11	11	473	153	465	150
Tennessee	22	22	12	420	289	414	282
Alabama	8	13	4	196	167	183	155
Mississippi	10	14	5	269	128	258	126
West South Central States:							
Arkansas	26	5	2	845	119	834	117
Louisiana	14	6	6	194	106	182	100
Oklahoma	43	14	14	1,050	304	1,043	298
Texas	90	48	33	1,876	1,455	1,785	1,434
Mountain States:							
Montana	10	6	7	63	49	62	39
Idaho	15	3	3	360	93	347	66
Wyoming	7	..	1	90	65	90	65
Colorado	33	6	6	492	82	490	80
New Mexico	11	4	1	142	60	141	58
Arizona	11	14	5	124	106	113	105
Utah	30	10	10	170	60	154	57
Nevada	..	..	..	11	3	11	2
Pacific States:							
Washington	44	21	20	425	177	380	159
Oregon	13	12	12	163	110	147	94
California	122	310	54	1,688	2,982	1,399	2,950
Total	2,192	1,606*	.....	31,289†	17,646*	30,373†	17,296
Median, 1944-1948	.....	.....	1,158	8,882		13,307	

* Corrected figures.

† Current corrections made in cumulative totals: Iowa, add 12 cases week ended September 17; Maryland, add 1 case, onset in July, 5 cases, onset in August, weeks not specified.

‡ Last two columns show reported incidence since approximate average seasonal low week: 27 weeks.

Marriages

BENJAMIN HERBERT SULLIVAN, Jacksonville, Fla., to Miss Elsie Marie Swieky at Tampa, September 4.

HOWARD CLARENCE MACMILLAN, Pittsburgh, to Miss Jean Reid Dalzell of Wooster, Ohio, August 27.

ALAN J. LEONARD, New Orleans, to Miss Elizabeth Ann Adney of Lebanon, Ind., August 4.

SHELTON E. JOHNSON, Muskogee, Okla., to Miss Lillian McDonald of Eufaula, August 23.

HENRY J. H. SCHWARTZ, Pittsburgh, to Miss Emily H. Levine of Bayonne, N. J., July 10.

FRANCIS R. MANLOVE, Alden, Pa., to Mrs. Charles Warren Kluber of Gladwyne, June 14.

Deaths

Abraham Juda Levy ⊕ Dixon, Ill.; born in Larnaca, Cyprus, July 23, 1896; Northwestern University Medical School, Chicago, 1930; certified by National Board of Medical Examiners; member of the International Organization of Medical Health Officers, Illinois Public Health Association, American Association on Mental Deficiency and the American Trudeau Society; fellow of the American Public Health Association; assistant director and director of health education, Straus Health Center, Jerusalem, Palestine, from 1931 to 1937; served as assistant director and clinician of Society for Crippled Children in Jerusalem; assistant epidemiologist with Illinois Department of Public Health in 1937; district health superintendent of the Illinois Department of Public Health from 1938 to 1944; affiliated with the Dixon State Hospital; author of "Community Health," "Sanitation" and "First Aid," books published in Hebrew; died August 26, aged 53, of coronary thrombosis.

Arthur David Jaques ⊕ Lynbrook, N. Y.; born in Brooklyn in 1876; Long Island College Hospital, Brooklyn, 1898; past president of the Queens-Nassau County Medical Society and the Associated Physicians of Long Island; for many years school director of the town of Hempstead and health officer of the village of Rockville Centre and East Rockaway; during World War I sanitary supervisor of Long Island and during World War II consulting psychiatrist to draft boards, for which he received a congressional citation; affiliated with Meadowbrook Hospital, Hempstead, Mercy and South Nassau Communities Hospital in Rockville Centre; honorary director of the Lynbrook National Bank and of the Rockville Centre Savings and Loan Association; served as mosquito control officer in Nassau County; died August 4, aged 73, of coronary thrombosis.

Oscar Mandel Plotkin ⊕ Houston, Texas; born in Chicago May 26, 1912; University of Illinois College of Medicine, Chicago, 1936; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; joined the staff of the Veterans Administration, serving first in Hines, Ill., and then in Columbia, S. C.; served overseas with the Ninth Infantry Division during World War II; received the Bronze Star and the Presidential Unit Citation and was discharged in 1946 with the rank of major; formerly senior resident and member of the staff of the Elgin (Ill.) State Hospital; served on the faculty of the Baylor University College of Medicine; member of the staffs of Jefferson Davis, Hermann and St. Elizabeth hospitals; died recently, aged 36.

George Carroll Lockard ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1903; professor of clinical medicine at his alma mater; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Association of Industrial Physicians and Surgeons; past president of the Medical and Chirurgical Faculty of Maryland and the Baltimore City Medical Society; a member of the Committee on Medical Care of Maryland; medical director of the Maryland Life Insurance Company; affiliated with the University Hospital, where he died August 7, aged 67, of cerebral hemorrhage.

Lewis Frederic Smead ⊕ Toledo, Ohio; Johns Hopkins University School of Medicine, Baltimore, 1905; member of the founders group of the American Board of Surgery; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, of which he was past treasurer and president; past president of the Academy of Medicine of Toledo and Lucas County; fellow of the International College of Surgeons and the American College of Surgeons; director of surgery from 1922 to 1943 and since 1944 chief of staff at the Toledo Hospital, where he died July 28, aged 71, of coronary thrombosis.

Ernest Elmer Smith ⊕ Flushing, N. Y.; Jefferson Medical College of Philadelphia, 1914; specialist certified by the American Board of Radiology; member of th [illegible] of North America and the American [illegible] served on the faculties of the New Yc [illegible] School and Hospital, where he was director of the school for x-ray technicians which he founded, and the New York Post-Graduate Medical School and Hospital; attending radiologist and director of radiology at St. Luke's Hospital in New York; died recently, aged 58, of heart disease.

Ferdinand Edward Dostal ⊕ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; affiliated with the University Hospital, where he died August 8, aged 67.

Frank Church Dudley, Brooklyn; Long Island College Hospital, Brooklyn, 1907; member of the American Medical Association; on the staff of the Samaritan Hospital; died in Great Barrington, Mass., July 31, aged 71.

Henry Waller Freeman, Washington, D. C.; Howard University College of Medicine, Washington, 1898; died July 24, aged 74, of acute cardiac dilatation.

James Isaac Garrard, Milledgeville, Ga.; Bellevue Hospital Medical College, New York, 1893; member of the American Medical Association; affiliated with the Milledgeville State Hospital; died recently, aged 79, of heart disease.

August Joseph Ghiglione ⊕ Seattle; Columbia University College of Physicians and Surgeons, New York, 1904; served as president of the staffs of the Providence Hospital and the Columbus Hospital, where he died July 18, aged 65, of cardiovascular renal disease.

George Courtenay Glass ⊕ Hartford, Conn.; Yale University School of Medicine, New Haven, 1931; certified by the National Board of Medical Examiners; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics and the New England Pediatric Society; affiliated with the Manchester (Conn.) Memorial Hospital, Middlesex Hospital in Middletown and the Hartford Hospital; died July 5, aged 44.

David E. Green, Pleasanton, Kan.; University Medical College of Kansas City, Mo., 1895; member of the American Medical Association; died in the Mercy Hospital, Fort Scott, June 20, aged 80, of coronary disease and arteriosclerosis.

Paul R. Hahn ⊕ Racine, Wis.; Northwestern University Medical School, Chicago, 1926; affiliated with St. Mary's and St. Luke's hospitals; member of the American Association of Industrial Physicians and Surgeons; died July 11, aged 49, of coronary disease.

Richard Connor Haislip, Harrisville, Ohio; Rush Medical College, Chicago, 1933; member of the American Medical Association; died July 29, aged 46.

Edward E. Haley, Buffalo; University of Buffalo School of Medicine, 1902; member of the American Medical Association; served as a member and chairman of the health board; formerly deputy health commissioner in charge of the division of communicable diseases; at one time member of the board of managers of the Buffalo City Hospital; affiliated with the Sisters of Charity Hospital; died July 30, aged 71, of bronchopneumonia and arteriosclerosis.

Ewin Petty Hall ⊕ Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1899; past president of the Tarrant County Medical Society; affiliated with Harris Memorial Methodist Hospital, St. Joseph's Hospital and All Saints Hospital, where he died July 7, aged 75, of nephritis and uremia.

William T. Hargis, Tell City, Ind.; University of Louisville (Ky.) Medical Department, 1894; member of the American Medical Association; formerly member of the school board and board of health; died July 8, aged 84, of carcinoma of the colon and liver.

Ashton Harwood, Binns Hall, Va.; Medical College of Virginia, Richmond, 1902; died recently, aged 75.

Quincy Robert Hauss, Sellersburg, Ind.; Eclectic Medical Institute, Cincinnati, 1887; for many years a trustee of Moore's Hill College, which later merged with Evansville (Ind.) College; at one time associated with St. Anthony's Hospital, Louisville, Ky.; died in St. Joseph's Infirmary, Louisville, August 10, aged 84, following a prostatic operation.

John Marion Hawk, Aubrey, Texas; Dallas Medical College, 1902; died in Denton in July, aged 78.

Hermon Hawkins ⊕ Jackson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1899; city health officer; affiliated with Memorial Hospital, where he died August 5, aged 89, of arteriosclerosis.

Alfred Joseph Hawks, Medford, Mass.; Boston University School of Medicine, 1892; for many years chairman of the board of health and city physician; died July 18, aged 80.

William Lewis Heeve, Baldwin, N. Y.; Eclectic Medical College of the City of New York, 1898; member of the American Medical Association; fellow of the American College of Surgeons; consulting surgeon to the Prospect Heights and Cumberland hospitals in Brooklyn; died August 14, aged 74, of coronary occlusion.

Russell Arthur Hennessey ⊕ Memphis, Tenn.; Loyola University School of Medicine, Chicago, 1916; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of

Surgeons; past president of the Memphis Urological Society; served during World Wars I and II; affiliated with the Baptist Memorial, John Gaston and Methodist hospitals and the Hospital for Crippled Adults; died in the Kennedy Veterans Hospital July 16, aged 55, of pneumonia and arteriosclerosis.

Anna M. Hennessy-Kinder, La Salle, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1904; died August 2, aged 68, of acute coronary occlusion.

James Dorn Howell, Berthoud, Colo.; Louisville (Ky.) Medical College, 1889; affiliated with Longmont (Colo.) Hospital and Clinic; died June 29, aged 84, of cerebral hemorrhage.

Ivan Lewis Hunt, Scottville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; member of the American Medical Association; at one time secretary of the Mason County Medical Society; served during World War I; formerly mayor of Scottville; for many years a member and past president of the school board; died June 14, aged 65, of coronary thrombosis.

Henry G. Isenberg, Westphalia, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1896; died July 4, aged 80, of carcinoma.

Edwin Martin Johnson, Washington, D. C.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1898; a captain in the medical corps of the U. S. Army during World War I; surgeon and head of the medical clinic of the Veterans Administration until he retired in 1943; died in the U. S. Naval Hospital, Bethesda, Md., July 23, aged 76.

John A. Keho, Bay City, Mich.; Detroit College of Medicine, 1897; member of the American Medical Association; died July 30, aged 75.

Francis Boland King, Derry, N. H.; Tufts College Medical School, Boston, 1934; certified by the National Board of Medical Examiners; member of the American Medical Association; for many years medical referee for Rockingham County; affiliated with the Alexander-Eastman Hospital, East Derry; died in the Joseph H. Pratt Diagnostic Hospital, Boston, July 10, aged 45, of coronary occlusion.

Chrystal Christopher McCue, Goodells, Mich.; Detroit College of Medicine and Surgery, 1926; died July 5, aged 51, of coronary embolism.

Edward L. McElfresh, Point Pleasant, W. Va.; Starling Medical College, Columbus, 1893; member of the American Medical Association; served on the staff of Holzer Hospital in Gallipolis, Ohio; died July 23, aged 79.

Raymond Maurice Malone, Galion, Ohio; Ohio State University College of Medicine, Columbus, 1925; member of the American Medical Association; affiliated with Galion City Hospital; died July 15, aged 51, of coronary thrombosis.

Augustus L. Marshall, Indianapolis; Medical College of Indiana, Indianapolis, 1905; member of the American Medical Association; for many years president of the board of directors of the Sunnyside Sanatorium; died July 1, aged 73, of cerebral hemorrhage.

Robert Francis Mathews ⊕ Worcester, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1905; member of the American Urological Association; affiliated with the City and St. Vincent's hospitals; died July 16, aged 68, of heart disease.

Albert David Mayer ⊕ New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1894; died July 29, aged 76.

Gage Clarence Moore ⊕ Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1934; served during World War II; affiliated with St. Joseph Hospital and Ottumwa Hospital, where he died July 17, aged 43, of heart disease.

Frank J. Morrison, Suffolk, Va.; University of the South Medical Department, Sewanee, Tenn., 1903; member of the American Medical Association; for many years resident surgeon for the Norfolk and Western Railroad, the Seaboard Air Line Railroad and physician for Planters Nut and Chocolate Company; affiliated with Virginia General Hospital, where he died July 17, aged 67, of myelogenous leukemia.

Ida Rebecca Lantz Muir, Spokane, Wash.; Northwestern University Woman's Medical School, Chicago, 1902; died July 11, aged 72, of bronchopneumonia.

Walter Howard Mulholland ⊕ Heuvelton, N. Y.; University and Bellevue Hospital Medical College, New York, 1899; past president of St. Lawrence County Medical Society; died July 21, aged 76, of cerebral thrombosis.

Franklin Nelson Murphy, Woodhaven, N. Y.; Long Island College Hospital, Brooklyn, 1900; died at Lake Winnisquam, N. H., July 5, aged 73, of arteriosclerosis.

David Vance Myers, Dallas, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1913; member of the American Medical Association; served during World War I; died July 19, aged 63, of arteriosclerotic heart disease.

Edgar Harris Myers, Coral Gables, Fla.; the Hahnemann Medical College and Hospital, Chicago, 1906; died in Chicago July 17, aged 68.

Archibald Cameron Nash, Cleveland; McGill University Faculty of Medicine, Montreal, Canada, 1899; affiliated with Glenville Hospital; died July 18, aged 73, of myocardial failure.

John Frank Newell, Hutchinson, Kan.; State University of Iowa College of Medicine, Iowa City, 1889; died in Grace Hospital July 27, aged 87, of heart block and benign hypertrophy of the prostate.

William Huggard Nugent, Waterbury, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1910; formerly practiced in New Haven, where he was on the staff of Grace Hospital; affiliated with Connecticut Children's Hospital, where he died July 25, aged 72, of coronary disease.

Archibald Ernest Olpp ⊕ Union City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; served during World War I; school physician in Secaucus; formerly congressman; served as vice president of the staff of North Hudson Hospital in Weehawken, where he was formerly a chief surgeon; died in the Hackensack (N. J.) Hospital July 26, aged 67, of cerebral hemorrhage.

Samuel Edward Overmass, Gordon, Neb.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died July 4, aged 77, of coronary occlusion and arteriosclerosis.

James Lenard Paris Sr.; Elizabethtown, Ill.; Chicago Medical School, 1928; died July 13, aged 62, of heart disease.

Daniel Frank Patchin ⊕ Niagara Falls, N. Y.; University and Bellevue Hospital Medical College, New York, 1913; fellow of the American College of Surgeons; served during World War I; affiliated with the De Graff Memorial Hospital North Tonawanda, Mount St. Mary's Hospital and the Niagara Falls Memorial Hospital, where he died July 15, aged 58.

Fred William Patton, Mount Vernon, Ill.; Miami Medical College, Cincinnati, 1884; member of the American Medical Association; died in Jefferson Memorial Hospital July 9, aged 93, of senility.

David White Peppard ⊕ Mansfield, Ohio; Western Reserve University Medical Department, Cleveland, 1901; on the staff of Mansfield General Hospital; died July 3, aged 72, of coronary occlusion.

Clarence Larimore Perry ⊕ Miami, Fla.; Ohio State University College of Medicine, Columbus, 1924; member of the Southern Surgical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; formerly fellow in surgery and first assistant in surgery at the Mayo Foundation in Rochester, Minn.; served in France during World War I; a member of the staffs of St. Francis Hospital and the Jackson Memorial Hospital, where he died July 6, aged 52, of coronary sclerosis.

Wilbur Moorhead Phelps ⊕ Cape Charles, Va.; Howard University College of Medicine, Washington, D. C., 1898; Columbia University Medical Department, Washington, D. C., 1903; past president of the Augusta County Medical Society; served overseas and was awarded the Silver Star for distinguished service during World War I; colonel in the medical reserve corps of the U. S. Army, retired; for many years affiliated with the King's Daughters' Hospital in Staunton; died in Hyattsville, Md., July 28, aged 72, of heart failure.

Frank Leslie Phillips, Bronson, Mich.; State University of Iowa College of Medicine, Iowa City, 1931; past president of the Branch County Medical Society; died in the Sturgis (Mich.) Memorial Hospital July 16, aged 48, of nephritis, acute pericarditis and bronchopneumonia.

Harold Edward Phillips ⊕ Indianapolis; Rush Medical College, Chicago, 1920; affiliated with the Veterans Administration; died July 14, aged 55, of carcinoma of the esophagus.

James Emory Poulton, Baltimore; Baltimore Medical College, 1906; served on the staff of the Maryland General Hospital, where he died recently, aged 69, of coronary thrombosis.

Abel J. Price, Thibodaux, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1894; died July 11, aged 81.

Lucius Warner Prichard, Ravenna, Ohio; University of Wooster Medical Department, Cleveland, 1892; member of the American Medical Association; veteran of the Spanish-American War and World War I; died July 11, aged 84, of carcinoma of the intestine.

Henry M. Quinn, Copemish, Mich.; Detroit College of Medicine, 1907; member of the American Medical Association; died July 2, aged 67, of coronary heart disease.

Ernest Henry Rahn, Baltimore; Maryland Medical College, Baltimore, 1912; member of the American Medical Association; died July 4, aged 61.

George L. Renaud ⊕ Detroit; Detroit College of Medicine, 1891; an Associate Fellow of the American Medical Association; died in Grosse Pointe July 8, aged 78.

Robert Wallace Richardson ⊕ Brooklyn; McGill University Faculty of Medicine, Montreal, Canada, 1909; director of hospital services for the Bethlehem Steel Company; died July 8, aged 64.

Frederick Jackson Riley, Chicago; Barnes Medical College, St. Louis, 1901; served during World War I; formerly surgeon for the Southern Pacific Railroad and the Ringling Brothers Circus; for many years a school doctor for the health department; died in the Veterans Administration Hospital in Hines, Ill., August 6, aged 73, of perforated intestinal ulcer and peritonitis.

John Stephens Rollins, Prague, Okla.; St. Louis College of Physicians and Surgeons, 1917; Eclectic Medical University, Kansas City, Mo., 1918; past president of the Okfuskee and Lincoln counties medical societies; owner of the Rollins Hospital; died July 18, aged 62, of carcinoma.

Max Rosenberg ⊕ Hillside, N. J.; L. R. C. P., L. R. C. S., Edinburgh and L. R. F. P. & S., Glasgow, Scotland, 1933; served during World War II; school physician; member of the staff of Beth Israel Hospital in Newark; died July 31, aged 44, of coronary occlusion.

John Hayes Rozzell, Gibson, Tenn.; University of Tennessee Medical Department, Nashville, 1902; affiliated with St. Mary's Hospital in Humboldt; died in Oursler Clinic-Hospital, Humboldt July 22, aged 77, of coronary occlusion.

Joseph A. Ruel, Haverhill, Mass.; Tufts College Medical School, Boston, 1911; member of the American Medical Association; served during World War I; school physician; on the advisory board and on the staff of Hale Hospital, where he died July 28, aged 70, of cerebral hemorrhage.

Lewis Lipman Seligman ⊕ Dinuba, Calif.; University of California Medical School, San Francisco, 1917; served during World Wars I and II; died July 9, aged 55.

William Franklin Sharp, Vonore, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1918; died July 13, aged 64, of coronary heart disease.

Gilbert Joseph Sheekley, Cleveland; St. Louis University School of Medicine, 1947; resident in radiology at Peoples Hospital in Akron, Ohio; died July 23, aged 26, of congenital heart disease.

Jacob George Silewski ⊕ Nanticoke, Pa.; Friedrich-Wilhelms-Universitat Medizinische Fakultat, Berlin, 1923; member of the American Diabetes Association; served as chief of the metabolic department at the Mercy Hospital; died July 21, aged 52, of heart disease.

Abraham Silverman ⊕ Philadelphia; Baltimore Medical College, 1907; died in Lankenau Hospital July 23, aged 63, of squamous cell carcinoma of the nose.

Joseph Chester Silvers, Muncie, Ind.; Indiana University School of Medicine, Indianapolis, 1926; member of the American Medical Association; affiliated with the Ball Memorial Hospital; past president of the Delaware-Blackford Counties Medical Society; died July 3, aged 47, of cerebral hemorrhage and hypertension.

Paul Edward Simonds ⊕ Riverside, Calif.; University of Southern California College of Medicine, Los Angeles, 1908; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; on the staffs of Riverside Community and Riverside County hospitals; died July 10, aged 72, of polycythemia and cerebral hemorrhage.

Thomas Kimball Slaughter, Wildwood, Fla.; Atlanta College of Physicians and Surgeons, 1899; member of the American Medical Association; died in Halifax Hospital, Daytona Beach, July 27, aged 73, of carcinoma of the throat.

Albert Micou Sneed, Toano, Va.; Medical College of Virginia, Richmond, 1912; member of the American Medical Association; county coroner; died in Bell Hospital, Williamsburg, July 29, aged 60, of cerebral hemorrhage.

Leo John Stafford ⊕ Adrian, Mich.; Detroit College of Medicine, 1911; affiliated with the Bixby Hospital, where he died July 26, aged 60, of cerebral hemorrhage.

Martin Bernard Strange ⊕ New Albany, Ind.; Indiana University School of Medicine, Indianapolis, 1937; served during World War II; on the staff of St. Edward Hospital; died July 15, aged 42, of coronary thrombosis.

Joseph Nelson Study, Cambridge City, Ind.; Bellevue Hospital Medical College, New York, 1883; member of the American Medical Association; died in the Reid Memorial Hospital, Richmond, June 13, aged 98, of uremia.

George Webster Sullivan ⊕ St. Edward, Neb.; University of Nebraska College of Medicine, Omaha, 1908; served on the school board for many years; owner of St. Edward Hospital; died July 5, aged 68, of coronary thrombosis.

Frederick C. Sweeney ⊕ East Jaffrey, N. H.; University of Vermont College of Medicine, Burlington, 1895; served overseas during World War I; for many years served on the town school board; died in the Monadnock Community Hospital in Peterborough June 22, aged 77.

Vernon John Telford ⊕ Litchfield, Minn.; University of Minnesota Medical School, Minneapolis, 1930; affiliated with the Litchfield Hospital; died in the Eitel Hospital, Minneapolis, July 18, aged 50, of heart disease.

Major Edgar Threlkeld ⊕ Miami, Fla.; University of Louisville (Ky.) Medical Department, 1919; past secretary of the Dade County Medical Society; died July 11, aged 57

Hans Lorenz Tretter ⊕ Trenton, N. J.; Karl-Franzens-Universitat Medizinische Fakultat, Graz, Austria, 1922; member of the American Association of Industrial Physicians and Surgeons; died July 22, aged 51, of coronary thrombosis.

Charles Merton Turrell, Van Nuys, Calif.; Detroit College of Medicine, 1907; formerly practiced in Detroit, where he was on the staffs of the Deaconess and St. Mary's hospitals and physician for the police department; served during World War I; died July 9, aged 64, of uremia and pyelitis.

William Henry Von der Weyer ⊕ St. Paul; Marquette University School of Medicine, Milwaukee, 1915; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; affiliated with Gillette State Hospital for Crippled Children, St. Joseph's, St. John's and Miller hospitals; died July 26, aged 57, of coronary occlusion.

Granville, Hunt Walker ⊕ Bellevue, Pa.; Jefferson Medical College of Philadelphia, 1902; president of the local board of health; served during World War I; affiliated with the Suburban General Hospital; died June 27, aged 72, of coronary occlusion.

John Wadell Warren, Edenton, N. C.; University College of Medicine, Richmond, 1907; formerly affiliated with the U. S. Public Health Service; died July 24, aged 65, of heart disease.

Salo Nordeman Weber ⊕ New York; Cornell University Medical College, New York, 1909; specialist certified by the American Board of Internal Medicine; served on the staffs of the Misericordia, Mount Sinai, Gouverneur and St. Clare's hospitals; died in Beverly Hills, Calif., July 29, aged 64, of coronary thrombosis.

James Weathersby Welch ⊕ Alexandria, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1935; served during World War II; affiliated with the Baptist Hospital; died at Rockaway Beach, Mo., July 19, aged 37, of heart disease.

Ella Annis Wilder ⊕ Middletown, Conn.; Boston University School of Medicine, 1923; member of the New England Obstetrical and Gynecological Society; on the staff of the Middlesex Hospital; died July 20, aged 52, of hypertensive heart disease.

Edith Sybil Hammond Williams, Kentfield, Calif.; Cooper Medical College, San Francisco, 1901; member of the American Medical Association; died in the Ross (Calif.) General Hospital July 4, aged 72, of heart disease.

Henry Allen Willis, Moncks Corner, S. C.; Medical College of the State of South Carolina, Charleston, 1926; member of the American Medical Association; died July 20, aged 47, of coronary thrombosis.

Stanley Mainard Wilson, Los Angeles; University of Southern California School of Medicine, Los Angeles, 1944; member of the American Medical Association; associated with the Hospital of the Good Samaritan; found dead in San Francisco July 10, aged 32.

Henry Winsor, Haverford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; served during World War I; died in the Bryn Mawr (Pa.) Hospital July 26, aged 74, of coronary thrombosis.

Foreign Letters

BELGIUM

(From Our Regular Correspondent)

Sept. 10, 1949.

Selection of Students

The question of admission to universities is often raised in Belgium. With respect to medicine it is of great importance, and several attempts have been made to establish a preliminary selection before entrance to the first year of medical studies.

Professor Weekers discussed this question in a recent issue of *Revue Médical de Liège.* He said that the present system of admission without formality of students who hold certificates of graduation from secondary schools is inadequate. He proposed that every student present himself for a university examination the first year. The examination should be held by the examining board and the student should send to this board his certificate of secondary studies, accompanied by a final evaluation of the director of the establishment which issued the certificate. A bulletin should reproduce all the examination marks obtained in the different subjects each year. In this way the university examination board will be informed about the general educational status and previous training of the applicant. Also, the students will know that their application to their studies during the entire course will be carefully evaluated in the selection of students for further study at the university. Furthermore, it will be necessary to select the students in the first year of their studies at the faculty. At the end of the first year of studies the students should be subjected to an examination in the subjects which they have chosen and for which they consider themselves qualified. The applicants who pass the examinations will be permitted to continue their studies; the applicant will not be permitted to continue if he fails to pass once or twice, depending on what has been decided.

Conservative Surgery of the Hand

Belenger, of the Society of Surgery, presented an interesting report based on numerous observations collected in a clinic managing occupational accidents. He considers that only the total absence of irrigation or the crushing of all the tissues justifies a mutilating intervention and that, unless the wounds are seen late, there is no reason to put on a plaster cast. It is essential to preserve what can be preserved, to suture all that can be sutured, to cover with grafts all surfaces deprived of their covering, to reduce fractures, to close articulations and suture tendons, to immobilize completely the injured fingers and to hospitalize the victim for injections of penicillin.

During the healing of the wounds mobilization should be induced more or less rapidly, depending on the presence or absence of fractures or of sutures of tendons. A subsequent intervention for the amputation of tissues regarded as hindering or useless should be decided on only after cicatrization and maximal recuperation.

This manner of procedure permits amputations that are much more economical than those which are made when the injured person is first received for treatment, it reduces the duration of evolution of wounds formerly put in plaster casts and it gives the victim the maximum chance for functional restoration. Belenger also presented tables showing the duration of unemployment of patients with various lesions according to the methods of treatment.

Medical Diploma in the Grand Duchy of Luxemburg

The last general assembly of the Society of Medical Sciences of the Grand Duchy of Luxemburg approved a report addressed to the Minister of National Education, who is in control of the medical college. It is the custom in the Grand Duchy that students of medicine pursue their studies at a medical faculty of their choice in some foreign country as free students and then present themselves in their own country for the examinations prescribed by law. They prove their presence at courses in a medical faculty by presenting a certificate given them by the professor in charge of the faculty. The medical examining board of Luxemburg, which is composed of medical practitioners, passes on the examinations and delivers the diploma of doctor of medicine when justified.

Numerous inconveniences result from this state of affairs, and on the basis of a thorough discussion the assembly presented its conclusions in the report of Dr. Loutsch. In this it is demanded that the students be registered at the medical faculty where they study as regular students. This involves their passing their examinations at the end of a year and obtaining a diploma of doctor of medicine. The writing of a doctor's thesis will be optional. The present system of medical examinations (candidacy, doctorate) will be abolished. They will be replaced by a general examination to which will be admitted only candidates of Luxemburg nationality who hold a diploma of doctor of medicine issued by a faculty of medicine. Only the passing of this examination will give one the right to practice medicine in the Grand Duchy.

The Medical Days of Brussels

The twenty-third session of the Medical Days of Brussels was very successful. At the inaugural session the Minister of Health stressed the value of these annual meetings as a form of postgraduate instruction. Another problem which received the minister's attention was the reduction of the number of patients in the university hospitals, which is a result of the generalization of social insurance. This is catastrophic as regards medical instruction.

The academic lecture was given by Professor Leriche of the College of France, whose subject was "Surgery, as a Discipline of the Knowledge of Man." He retraced the successive efforts of this art, which perpetually renews itself and in so doing produces new discoveries.

Numerous scientific societies held their meetings during these Medical Days: the Belgian Medical Society of Physical Education and Sports, the Belgian League Against Rheumatism, the Belgian Society of Scientific Studies on Tuberculosis, the General Association of Belgian Dentists, the Medico-Surgical Society of Railroads and the National Union of Medical Reserve Officers.

The first International Congress of Associations for the Management of Diabetes was held within the framework of the Medical Days of Brussels. Professor Hoet of Louvain with the collaboration of Professor Joslin of Boston, of Sir Henry Dal of London and the world committees effected an unexpectedly successful session.

TURKEY

(From Our Regular Correspondent)

ANKARA, Sept. 5, 1949.

Transmission, Prophylaxis and Therapy of Oriental Sore

Oriental sore in Turkey is mostly found in the eastern and southeastern provinces of Diyarbekir, Gaziantep, Urfa, Mardin, Siirt and Elâziz, but isolated cases of infection with Leishmania tropica may be encountered anywhere in persons who have never been to these places. Only in the alien or native population of Ankara, Istanbul and Izmir has oriental sore not hitherto been encountered. In places where it is endemic the afflicted are mostly natives who neglect the rules of personal hygiene. They call it the "annula sore"; a single boil is called a male boil; if more than one occurs they are called female boils. The sore occurs mostly on the face, neck, arms, legs, hands and feet. The native population believe that it is caused by air, dust or water. Some say that the cause is house flies, mosquitoes and bedbugs; a few believe that the "Tatarcik"

(Phlebotomus papatasii) causes it. The Phlebotomus breeds in summer and autumn, which coincides with the increase in oriental sores. Most natives have had the lesion during childhood or youth and are immune. The new extensions of railway lines in the east and south have in recent years contributed to the spread of cutaneous leishmaniasis. To enlighten the people on the subject the Ministry of Health and Social Assistance makes use of posters, pamphlets, films, lectures and radio talks; unfortunately, the native population does not show much interest and cooperation is poor.

Dr. Celal Cansun, a bacteriologist of the Elâziz General Hospital, reported on his experiments with prophylaxis, intensive therapy and direct transmission of oriental sore. He immunized himself with material from lesions on the leg and hand of a member of the household. Giemsa stain of light scrapings from the epidermis of the sore revealed many Leish. tropica; Dr. Cansun vaccinated himself with this material, using a lancet, on the upper arm on March 3, 1947. In September a slight redness was visible at the vaccination area and a papule appeared; it was not accompanied with either itching or other irritation, but after a few days the epidermis thickened and hardened like parchment and the area became purple, pink and bright, with a red ring around it. The papule grew and swelled like a blister, and in February 1948 it matured; the surrounding regressing area increased in redness; a crust formed, so that the lesion looked exactly like an oriental sore. The skin of the lesion was now purple and soft and appeared to have pus underneath. There was no pain even when the area was pressed or stretched, and there was no fever or any other untoward condition. A few days later a bloody secretion was released through the epidermis, the pinkness and hardness disappeared and a crust, 2 cm. in diameter, formed. When the crust was removed, Prof. Hulusi Behdjet's (Istanbul University Medical School) "nail symptom" was clearly visible. Special care was taken to prevent a secondary infection. Within a few weeks the bloody secretion diminished, the crust regressed and the hardness disappeared. Two months later only a small scar remained, which proves that insects are not the only transmitters and that oriental sore can be transmitted by direct contact.

Dr. Celal Cansun has published his observations of 11 patients given the intensive treatment at the Elâziz General Hospital, 4 children between the ages of 2 and 6 and 3 men and 4 women between 18 and 51 years of age. Several patients had one single boil on the face and others several boils on the arms and legs. Leish. tropica was recovered in all 11 patients. When the crust of the boil had been carefully removed and iodine applied to the surrounding area, a subcutaneous injection of a 20 per cent solution of quinine hydrochloride and antipyrine was injected into the surrounding area of the boil. Then an alcohol and methylene blue dressing was applied. These injections were repeated every other day for one week. After five days the swelling and edema began to regress, the boil decreased in size and a crust formed. After one month, only the scar of the boil remained.

Good results have also been obtained with injections of quinacrine hydrochloride, but great care must be taken that it comes in contact with all parasites, as otherwise it is ineffective. Boils thus treated healed in twenty to twenty-five days. Autohemotherapy, twice a week with injections around the boil and also intramuscularly, has sometimes given good results. Silver nitrate, iodine, formaldehyde, zinc oxide, iodoform and potassium permanganate powder and ointment did not have any effect on the parasites. Cauterization and surgical treatment have also been tried, but scarring occurs, as with roentgen therapy and electrocoagulation. Arsenic, antimony and bismuth compounds given by mouth also had good effects.

The oriental sore takes a year to heal and leaves a large scar if untreated; if not well taken care of and a secondary infection occurs, it takes much more than a year and leaves a very ugly large scar.

At present oriental sore is an important public health problem in Turkey. The application of dichlorodiphenyltrichloroethane (DDT) against diseases transmitted by insects, such as flies, fleas, bedbugs, mosquitoes and Phlebotomus, has shown excellent results. In the southeastern provinces there has been a considerable decline in new infections with Leish. tropica, which tends to prove that it is transmitted to man by some parasite, probably Phlebotomus papatasii.

Haseki Sultan Hospital for Children

The old Haseki Sultan Hospital in Istanbul was established during the reign of Sultan Suleyman I (1495-1566). It was erected by Architect Sinan, who built the famous Suleymaniye Mosque. It then was a fully staffed and fully equipped hospital; it was in operation about two hundred years and then fell into disuse. Later Haseki Sultan, favorite wife of Sultan Mahmud II (1785-1839), established twenty pavilions for a two hundred bed hospital for women. Since the reorganization of Istanbul University in 1933, the hospital has also admitted male patients and children and, though a municipal hospital, has become a part of the Istanbul University Medical School's teaching unit.

Dr. Lutfi Kirdar, the mayor of Istanbul, had the more than 400 year old remains of the original hospital repaired and on May 29, 1948, opened the newly added one hundred bed children's hospital, where children up to 7 years of age are cared for at the expense of the municipality. The old building now houses the new hospital's outpatient department and child welfare clinic. Dr. Kirdar now plans to add buildings for a one thousand bed general hospital to meet the needs of Istanbul's growing population.

BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Aug. 18, 1949.

Canicola Fever

The first case of "canicola fever" in man observed in Brazil was recently reported by Prof. João Alves Meira and Dr. Marcelo Corrêa at Sociedade de Medicina e Cirurgia of São Paulo.

The clinical picture shown by this patient took the form of so-called benign catarrhal jaundice. However, the cerebrospinal fluid examination revealed a meningeal inflammation without any clinical symptoms of meningeal involvement. The definitive diagnosis was established by serologic examination (positive reaction to the agglutination test for Leptospira canicola) in the second or icteric stage of the disease. The result of the agglutination test for Leptospira icterohaemorrhagiae was twice negative in the blood and once in the spinal fluid. Prof. Alves Meira and Dr. Marcelo Corrêa emphasized the diagnostic importance of the nonicteric type of leptospirosis canicola, which occurs often in other countries.

Blood Groups in Brazilian Indians

The common blood groups, MN factors and Rh types have been determined in Caiuá and Bororo Indians of the state of Matto Grosso (Brazil), according to the researches of Drs. Ottensooser and Pasqualin. Tests carried out in 356 Indians (237 Caiuá and 119 Bororo) have revealed the O group in all of them. Among 134 Caiuá, 79.9 per cent had type M; 0.7 per cent had type N and 19.4 per cent type MN. Among 173 Caiuá and 103 Bororo not one Rh-negative person was found. The distribution of the Rh types in 135 Caiuá and 103 Bororo was almost identical. American Indians are similar to Mongolians with respect to some serologic characteristics, such as a scarcity or lack of the Rh-negative type, but there are also within this ethnical group high proportions of O, M and Rh_2 types. In Matto Grosso Indians these percentages are particularly high.,

Correspondence

PNEUMOENCEPHALOGRAPHIA

To the Editor:—I wish to voice my disagreement with many of the statements in the paper by Casamajor, Laidlaw and Kozinn, "Validity of Pneumoencephalographic Diagnosis" (J. A. M. A. **140**: 1329 [Aug. 27] 1949).

The astounding conclusion of the authors, "Pneumoencephalography is a method of neurosurgical not neurologic diagnosis," is surely made without the realization that pneumoencephalography is one of the most valuable diagnostic procedures that one can use to differentiate the neurosurgical cases from the neurologic ones. I do not agree that there should be general doubt cast on the correctness of the diagnosis of a cerebral atrophic process by air studies. True, there are many borderline cases difficult to distinguish from normal, but in the main the diagnosis may be made with assurance. The opinions of the authors have been drawn from a study of pneumoencephalograms in children, yet their conclusions (which often are the only portions of a paper to be abstracted) are not specifically limited to children.

D. C. EAGLESHAM, M.D., Guelph, Ontario, Canada.

UNDECYLENIC ACID IN PSORIASIS

To the Editor:—Recently two articles concerning the use of undecylenic acid in psoriasis appeared in THE JOURNAL (Perlman, H. H.: Undecylenic Acid Given Orally in Psoriasis and Neurodermatitis, J. A. M. A. **139**: 444-447 [Feb. 12] 1949. Perlman, H. H., and Milberg, I. L.: Peroral Administration of Undecylenic Acid in Psoriasis, J. A. M. A. **140**: 865-868 [July 9] 1949). The original report stated, "A series of 17 patients with chronic psoriasis . . . were given gradually increasing doses of undecylenic acid by mouth for varying periods of time with definite improvement in the psoriasis. . . ." The second report stated that 41 psoriatic patients were treated. It also contained the following statements, "The standard dose eventually adopted was 45 pearls of 0.44 cc. each per day. . . . The ingestion was found free from serious or lasting toxic effects. . . . Of 40 psoriatic patients, 12 showed unequivocal improvement . . . 15 were somewhat improved, 10 evidenced no change and 3 had distinct aggravation of the disease." The concluding paragraph states, "Much further investigation will be needed before definite conclusions can be drawn."

It is far too early to evaluate this form of therapy. The number of patients treated and the period of observation is far from adequate for permanent conclusions. I have observed a few patients, and I did not discover improvement in any, although it is common knowledge that psoriatic patients will frequently respond to almost any new form of therapy. One patient with a healed gastric ulcer complained of diarrhea and severe abdominal pain after three weeks of treatment with much smaller doses than those recommended. The medication was discontinued, but one week later a severe intestinal hemorrhage developed, necessitating emergency hospitalization. Another patient, with localized patches of psoriasis of many years' duration, was admitted to the hospital with exfoliative dermatitis (generalized) following undecylenic acid therapy. These occurrences may have been coincidental.

I want to emphasize that the use of this drug is still in an early experimental stage. The reports have resulted in a flood of requests for this drug by discouraged sufferers from this disease. A deterrent to some of these patients was the expense of the 45 pills daily ($4.50 per hundred) recommended in these reports for an "indefinite period of time."

In all fairness, it should be pointed out that the object of the reports was merely to "submit the method and its many possible modifications for more extensive clinical evaluation and further fundamental study," and not for widespread and haphazard use of a drug, the rationale and systemic effects of which are unknown. As the authors pointedly observed, "Much further investigation will be needed before definite conclusions can be drawn."

HOWARD T. BEHRMAN, M.D., New York.

RADIATION CATARACTS

To the Editor:—The useful editorial in THE JOURNAL (Aug. 13, 1949) on "Radiation Cataracts" calls attention to one of the hazards in the development of this field of high energy radiations. There is one point that I believe should be corrected. Certain statements in the editorial give the impression that the cataracts occurred because the limits of exposure that were then considered permissible were too high. As a matter of fact, this had nothing to do with it, because, in each instance where a radiation cataract has developed, the eye had received much more radiation than the permissible dose.

In most instances the amounts received can only be estimated, as adequate measurements were not made at the time, and scientific enthusiasm not infrequently outran the maintenance of precautions. In reconstructing the circumstances of known exposures, the scientists involved agreed that they had probably received one or more acute exposures equivalent to 20 to 100 roentgen units in the region of the head and eyes in addition to what might be termed routine chronic exposures at accepted permissible levels. These exposures were incurred while the physicists were adjusting the cyclotrons and working inside the protective barriers while the instruments were in operation.

It is true that dosimetric methods for neutrons are as yet unsatisfactory. However, workers keeping within the permissible dose level as measured by presently available methods have not shown any evidence of harm. The ideal permissible dose for radiation is one comparable with the natural background radiation. However, this ideal cannot be practically achieved, and the established permissible dose levels are aimed to provide safety for the worker and still permit the development of important research.

The National Research Council appointed an *ad hoc* committee to investigate further the conditions and circumstances which had resulted in the development of cataract. At the same time, the Atomic Energy Commission, acknowledging its high degree of responsibility in the field of radiation effects, made arrangements with the National Research Council to underwrite the cost of these investigations and, in addition, asked the National Research Council to continue its committee. This committee was asked to examine the field thoroughly and to collaborate with other scientists in setting up an organized research program designed to fill the lacunas in our knowledge of neutron effects with particular emphasis on the cataract problem. The Atomic Energy Commission, in addition to supporting the committee, has supported a continuing survey of exposed persons as well as research related to the problem.

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmens Compensation Acts: Right of Industrial Commission to Order Autopsy.—This was an action to recover a compensation award by a widow who alleged that the death of her husband was caused by silicosis and superimposed tuberculosis. From the granting of an award, the employer appealed to the Supreme Court of Utah.

The deceased had been an employee of the defendant, Silver King Coalition Mines Company, and he died on April 8, 1947, after a considerable period of illness. No report of either the illness or death was furnished to the employer until after the deceased had been buried. About five weeks after the funeral, the Industrial Commission notified the employer's insurance carrier that a claim for compensation had been filed in which it was alleged that the death was caused by an occupational disease, namely, silicosis. On being informed of the claim, the insurance carrier made a rather extensive investigation as to the cause of death. On May 27 the widow was contacted and informed that the insurance carrier had interviewed the doctors who might have knowledge of the deceased's condition, but from the information available it was impossible to determine the cause of his death; the widow was also informed that the only way the cause of death could be definitely established was by means of an autopsy, and a request was made that such be permitted. The widow refused to consent to have the body disinterred. Further investigation was made by the insurance carrier, and a written demand was made on the widow for her consent. Not receiving a reply to this last demand, the insurance carrier made a written request to the Industrial Commission for an order permitting an autopsy. The widow was contacted by the Industrial Commission and advised as to the demand, but she remained adamant in her refusal to permit an examination. The commission, at that time, refused to order an autopsy out of deference to the widow's wishes. During an informal hearing on the matter, the commissioner made the following statement to the widow and to the agent or the insurance carrier: "As it stands, I will not order an autopsy. I request that both of you go in quest of more information on which the case may be decided." Some further efforts to determine the cause of death were made, and, after having used reasonable efforts to secure additional accurate information, the carrier informed the commission that evidence with respect to the cause of death was still uncertain and unsatisfactory and that accurate information could be obtained only by a postmortem examination. Subsequent to this, the commission, by letter dated June 24, 1947, notified the insurance carrier that, out of deference to the wishes of the widow and in view of information which seemed to be available in connection with the death of the deceased, the request for an autopsy was denied. Both the commission and the widow were advised prior to the denial of the order that, in the opinion of competent pathologists, a successful autopsy could be performed as late as six to eight months after death and any uncertainties as to the presence of a silicotic condition in the lungs could be removed.

The question for decision, said the Supreme Court, is whether or not the applicant, Dora R. Draper, should be prevented from pursuing her claim because the commission refused to permit an autopsy.

The law relating to occupational diseases provides (*Section 42-1a-47, U.C.A. 1943*):

"On the filing of a claim for compensation for death from an occupational disease where in the opinion of the Commission it is necessary to accurately and scientifically ascertain the cause of death, an autopsy may be ordered by any member of the Commission and shall be made by a person designated by such member of the Commission. The person requesting any such autopsy shall pay the charge of the physician making the same. Any person interested may designate a duly licensed physician to attend such autopsy, and the findings of the physician performing the autopsy shall be filed with the Commission and shall be a public record. All proceedings for compensation shall be suspended upon refusal of the claimant or claimants to permit such autopsy when so ordered. Where an autopsy has been performed pursuant to an order of any member of the Commission no cause of action shall lie against any person, firm or corporation for participating in or requesting such autopsy."

We find nothing in this section, said the Supreme Court, which gives any litigant an absolute right to have an autopsy performed. At the most, it liberalizes the common law rule and permits an autopsy to be performed when, in the opinion of the commission, it is necessary to accurately and scientifically ascertain the cause of death. Its purpose is to give litigants an opportunity to obtain and present to the commission scientific and reliable evidence on the causes of death. To allow sentimental reasons to be used as an excuse to prevent the examination not only defeats the purpose of the act but prevents the commission from obtaining what might be the true facts. We cannot, of course, extend this statute beyond the meaning of the terms employed, but we can determine the legislative intent within the phraseology of the section keeping in mind the purpose motivating the enactment.

Approaching the problem from a legislative aspect, the Supreme Court continued, we conclude that the legislature intended to make the decision ordering an autopsy discretionary with the commission and that the legislature further intended that in exercising its discretion the commission would not act in an arbitrary and capricious manner but would exercise its discretion rationally and reasonably. It would be unrealistic for us to conclude that the legislature intended that the commission had the power arbitrarily to deny the request and that such action was not subject to review by this court. Such an interpretation would clothe the commission with untouchable powers and extend to it authority not possessed by any other quasi-judicial agency. The statute prohibits the commission from proceeding with the hearing if the applicant refuses to permit an autopsy when ordered by the commission. However, there is no provision as to what shall be done if the commission arbitrarily fails to so order—apparently for the reason that the legislature assumed that permission would be granted by the commission when reasonably necessary for the purpose of determining the cause of death. In view of the fact that the commission in this case proceeded with the hearing without an autopsy, we must determine whether or not its denial of the request for the autopsy was arbitrary and capricious. If so, then the employer should be entitled to the same right as is granted by the statute against a noncomplying applicant.

After reviewing the medical evidence in some detail, the Supreme Court concluded that it clearly showed that the cause of death was doubtful and that the error of the commission in denying the autopsy was prejudicial to the substantial rights of the employer; prejudicial for the reason that the employer was prevented from obtaining what might have been the true reason for the death of the deceased, and it was denied the right to produce evidence which the statute contemplated would be made available by the commission. All the doctors who in any way participated in treating the deceased or who testified as witnesses at the hearing were uncertain as to the factors causing the acute myocarditis. There was disagreement as to whether or not silicosis might ever become a producing cause of heart disease; but those doctors who testified that in their opinion silicosis could be a contributing factor did not dispute the statement that only the advanced stage would bring about this result. Moreover, the only evidence in the record that silicosis or tuberculosis were contributing factors to the death is the death certificate executed by Dr. Nielsen and in his testimony on the witness stand. Both the certificate and the physician's testimony are uncertain in connection with the diagnosis of silicosis and a superimposed tuberculosis as being a contributing factor to the deceased's death. All the doctors had been interviewed by the insurance carrier before the commission denied the request for the autopsy. The evidence given the adjuster for the insurance carrier was in substance the same as that given at the hearing, and both the widow and the commission were informed of its substance and were informed that each doctor had expressed uncertainty about the cause of death. With this knowledge before the commission and with the further knowledge that a postmortem examination was the only means by which a true cause of death could be established, said the Supreme Court, we are unable to conclude why any reasonable person or any reasonable commission would deny an autopsy. Conceding that the legislature intended to vest the commission with discretionary powers, the discretion we envisage the legislature had in mind is not the indulgence of a whim but is the exercise of sound judgment based on facts and guided by law. Undoubtedly the commission was actuated solely by the personal preference of the applicant and as between the two litigants the error was committed at the solicitation of the widow and the effect of the error must be accepted by her.

Accordingly the award in favor of the widow was annulled and the matter was remanded to the Commission for further proceedings consistent with the opinion. *Silver King Coalition Mines Company vs. Industrial Commission, 204 P. (2d) 811, (Utah, 1949).*

[In a companion case decided by the Supreme Court of Utah on the same day, the same question was raised. The court of that case said:

"Defendants in both cases seek to support the refusal to grant an autopsy on the grounds that if the Commission could properly find that silicosis was the cause of death then an order denying an autopsy would not be arbitrary. This statement does not correctly reflect the principle of law involved. If such were the law, then the statute would only be of value when there was no evidence concerning or no disagreement as to the cause of death. We believe the statute to be of importance in those cases where there is a difference of opinion.

"Litigants need not and the Commission should not rely on evidence less strong than positive knowledge, if the latter type is reasonably obtainable. If there is a strong probability that uncertainty can be removed, the right to produce what might be the best evidence should not be conditioned upon whether the applicant has testimony to establish a prima facie case. Rather, it should be based on whether all reasonable persons must conclude that an autopsy would establish with some degree of certainty, doubtful causes of death."

The award in this case in favor of the applicant was annulled and the matter remanded for further proceedings. *Silver King Coalition Mines Company et al vs. Industrial Commission, 204 P. (2d) 817, (Utah, 1949).*]

Malpractice: Physician's Liability for Mistake in Diagnosis; Failure to Make Blood and Urine Tests.—This was an action for damages alleged to have been caused by the negligence of the defendant physician as an employee of the defendant hospital. From a judgment for the plaintiff, the defendants appealed to the United States Court of Appeals, District of Columbia Circuit.

The plaintiff was found in an unconscious condition and removed by the police, on the advice of a physician, to the defendant hospital. The defendant physician, on duty in the emergency room, gave her an extensive physical and neurologic examination, but without either blood or urine tests, but discovered no abnormalities to account for the coma. After reviving her with ammonia, the doctor inquired whether she had been drinking. She replied, "Too much and too long." There was no odor of alcohol on her breath. She lapsed into unconsciousness and was revived a second time. The doctor concluded that she was suffering from acute alcoholism and released her to the custody of the police, who took her first to the Women's Bureau and then to another hospital. Five days later an operation was performed in which a blood clot was removed from her brain. At the time of the trial she was a complete invalid and bedridden.

Testimony for the plaintiff indicated that approved practice by physicians in this jurisdiction, exercising ordinary care and skill, requires blood or urine analysis as a prerequisite to a diagnosis of acute alcoholism in the case of an unconscious patient. There was also testimony that the plaintiff was a teetotaler.

The Court of Appeals said that it seemed clear from the evidence that the defendants had no part in causing the cerebral injury of the plaintiff and, therefore, they were not responsible for injury or damage from that cause. They were responsible only for such injury and damage, if any, as resulted from their negligence. This case, as it went to the jury, with evidence of negligence on the part of the defendants and the distressing condition of the plaintiff, required from the trial court a careful instruction to the jury defining the limit of the defendants' responsibility and the proper measure of damages. There was no instruction, however, to the effect that the only injury for which the defendants were liable in damages was such injury, including the aggravation of any existing condition, as flowed from their negligence and that it could not include damages for any other condition from which the plaintiff might be suffering. Holding that the omission of such an instruction was prejudicial error, the Court of Appeals reversed the judgment in favor of the plaintiff and remanded the case for a new trial.—*Central Dispensary and Emergency Hospital, Inc. et al v. Harbaugh (1949) 174 F. (2d) 507.*

Medical Motion Pictures

FILM REVIEWS

Over-Dependency (Mental Mechanisms Series, no. 3). 16 mm., black and white, sound, 1,145 feet (1 reel), showing time thirty-two minutes. Produced in 1949 by the National Film Board for the Mental Health Division of the Department of National Health and Welfare in cooperation with the Allan Memorial Institute of Psychiatry of McGill University and the Royal Victoria Hospital, Montreal. Procurable on rental or purchase from the National Film Board of Canada, 1270 Avenue of the Americas, New York 20, and 400 West Madison Street, Chicago 6.

The film introduces the audience to a young married couple, both of whom are employed and in responsible positions. The husband is quickly identified as immature and the wife protective.

The opening scenes show the husband ill and unable to go to work, although he has an important job assignment for that day. His wife makes arrangements for him to see a doctor, who gives him a thorough physical check-up and asks him about his personal life and childhood.

The medical examination does not reveal any physical disturbances. The doctor explains the psychosomatic relationships and begins the treatment of the patient through a series of interviews. The interviews are presented with a series of flashbacks to significant incidents during the patient's childhood which relate to his present complaints and which are based on a father who showed little interest in his son, an unsympathetic older brother and an overprotective mother and sister. As an adult he expects and gets the attention from a wife (older than he) while his mother continues to play an important part in his adult life and his wife has, in many respects, assumed the role of the mother. As the treatment progresses the capabilities of the patient increase, with improvement in his occupational and marital status.

The film is excellent in its presentation of everyday people and a patient who is not psychotic or extremely ill. The subtle use of almost obscure habits and mannerisms in the portrayal of the patient is well done, and the "mother" is convincing in her role. Explanations of the psychosomatic aspects of medicine could be improved, and the film does not always clearly relate the patient's childhood to his symptoms. Professional groups may be expected to criticize the failure to identify the doctor and his training and the absence of more explanation regarding the type of treatment and the number of therapy sessions.

The film is suitable for professional audiences, both medical workers and those in allied professions. It is also recommended for lay audiences if the showing is followed by a discussion led by a skilled moderator. The photography and narration are excellent.

Let Your Child Help You. 16 mm., black and white, sound, 375 feet, showing time ten minutes. Prepared in 1947 by Alice V. Keliher, Ph.D., New York University. Procurable on rental from New York University Film Library, 26 Washington Place, New York 3, or on purchase from Willow Distributing Co., Inc., 551 Fifth Avenue, New York 16.

This film illustrates specific ways in which parents and children can carry on household tasks together, such as preparing meals, setting the table and washing dishes, and how children can be given increased responsibility as they become older. The particular strength in this film is its portrayal of the small child's shift in attention and the mother's acceptance of these shifts. The fact that "Helen" does not know or feel she is doing work is something that should be understood by mothers since the child may not be ready to assume responsibility.

The greatest value in the film lies in its use as the point of departure for discussion of the whole topic of responsibility. The film is recommended for parent education in preschool child growth and development, in well-child conferences, church groups of parents concerned with the interest of children, social workers and home economic groups. The narration is not well done and the quality of the voice is poor. Photography is fair to good.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners. *Parts I and II,* Feb. 13-15. Centers where there are approved medical schools and five or more candidates. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology, Inc. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

American Board of Dermatology and Syphilology, Inc.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

American Board of Obstetrics and Gynecology, Inc. *Written and Review of Case Histories. Part I.* Various Centers. Feb. 3. Final date for filing applications is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Ophthalmology: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II,* New York City, Feb. 9-10. Sec. Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

American Board of Pediatrics: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Preventive Medicine and Public Health: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology, Inc. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, October 26. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: *Written.* Various Centers, Dec. 3. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

Arkansas: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

Colorado: * Denver, Jan. 3-6. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

Connecticut: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven. *Homeopathic.* Derby, Nov. 8-9. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Delaware: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

District of Columbia: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

Georgia: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

Idaho: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

Indiana: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

Kentucky: Louisville, Dec. 12-14. Sec., Dr. Bruce Underwood, 620 South Third Street, Louisville 2.

Louisiana: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Building, New Orleans 12.

Maine: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

Maryland: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

Massachusetts: Boston, Nov. 15-18. Sec., Dr. George L. Schadt, 413 East State House, Boston.

Michigan: * *Examination.* Lansing, Oct. 12-14. *Reciprocity.* Oct. 11. Sec., Dr. J. Earl McIntyre, 100 W. Allegan Street, Lansing 8.

Minnesota: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Mississippi: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

Missouri: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Kansas City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

Nevada: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City.

New Hampshire: Concord, March 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

New Jersey: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe, Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

North Carolina: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

North Dakota: *Examination.* Grand Forks, Jan. 4-6. *Reciprocity.* Jan. 7. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* Columbus, December. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oklahoma: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: * *Endorsement.* Portland, Nov. 4. *Written.* Portland, January. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland 4.

Pennsylvania: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Building, Harrisburg.

Puerto Rico: *Examination.* Santurce, March 7. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

South Carolina: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

Utah: *Examination.* Salt Lake City, June. Sec., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

Virginia: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Washington: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Colorado: *Examination.* Denver, Dec. 7-8. Sec., Esther B. Starks, 1459 Ogden Street, Denver.

District of Columbia: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

Florida: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa: *Examination.* Des Moines, Oct. 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

Oklahoma: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

Oregon: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

South Dakota: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Washington: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

Wisconsin: Milwaukee, Dec. 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

77:425-560 (April) 1949

Amino Acid Tolerance Tests in Children. H. Anfanger and R. M. Heavenrich.—p. 425.
Epidemic of Diphtheria in Athens, Greece, During Winter 1946-1947. C. Chroemis, N. Zervos, K. Padiatellis and others.—p. 437.
Results of Schick Testing Three Years After Injection of Protamine Diphtheria Toxoid. V. Ross.—p. 450.
Normal and Pathologic Physiology of Bone Marrow. W. W. Zuelzer. —p. 482.
Reticulogranuloma: Report of Case of Eosinophilic Granuloma of Bone Associated with Nonlipid Reticulosis of Skin and Oral Mucosa Under Clinical Picture of Hand-Schüller-Christian Disease. H. Pinkus, L. A. Copps, S. Custer and S. Epstein.—p. 503.

American Journal of Medical Sciences, Philadelphia

217:475-592 (May) 1949

Observations on Penicillin-Treated Cardiovascular Syphilis. J. Edeiken, M. S. Falk and H. P. Steiger.—p. 475.
*Therapy of Subacute Bacterial Endocarditis: Report of 24 Cases Treated with Penicillin. E. H. Drake and R. M. Denham.—p. 485.
Modification of Cardiac Output After Intravenous Injection of Hypertonic Glucose Solution. M. Segers and J. P. Walsh.—p. 494.
Mechanism by Which Intravenous Injections of Hypertonic Glucose Solution Cause Increased Cardiac Output. J. P. Walsh.—p. 498.
Amebiasis: Experience in the Johns Hopkins Hospital, 1936-1946. F. W. Davis Jr.—p. 505.
Subacute Thyroiditis, Struma Fibrosa, Struma Lymphomatosa: Clinical-Pathological Study. R. P. Lasser and D. M. Grayzel.—p. 518.
*Some Aspects of Hypertensive Disease of Pregnancy Treated by Splanchnicectomy. M. M. Peet and E. M. Isberg.—p. 530.
Secretory Response to Histamine in Individuals with Normal and Abnormal Gastric Mucosa. W. E. Ricketts, J. B. Kirsner and W. L. Palmer.—p. 539.
Gastroscopic Appearance of Gastric Mucosa in Peptic Ulcer. W. E. Ricketts, J. B. Kirsner and W. L. Palmer.—p. 542.
Diabetes and Vascular Disease in Youth. H. F. Root.—p. 545.
Studies in Hepatic Glycogen Storage: I. Adrenalin-Induced Hyperglycemia as Index of Liver Function. L. W. Kinsell, G. D. Michaels, H. A. Weiss and H. C. Barton Jr.—p. 554.
Effect of Benzoic Acid and Carinamide on Blood Penicillin Levels and on Renal Function. J. F. Waldo, J. M. Masson, Wan Ching Lu and Jeanne Tollstrup.—p. 563.
Normal Roentgenogram of Chest in Infants and Children. J. R. Hodgson. —p. 569.
Folic Acid and Antagonists in Neoplastic Disease. J. B. Thiersch and F. S. Philips.—p. 575.

Subacute Bacterial Endocarditis.—Drake and Denham treated 23 patients with subacute bacterial endocarditis, 12 males and 11 females between the ages of 10 and 65, with penicillin. Three of the patients less than 20 years of age had congenital cardiac lesions. The remaining 20 cases were of rheumatic causation. The total dose of penicillin varied from 1,800,000 to 194,000,000 units. The average daily dose was 800,000 units. Duration of therapy varied from sixteen to ninety-seven days. Variation in dosage and length of treatment was influenced partly by the response to therapy and partly by scarcity of penicillin during the early part of the study. The continuous intravenous method of injection was employed initially, to be replaced later by the intermittent intramuscular route. Five patients, 4 of whom had suffered one or more clinical relapses, died; 18 are alive and free from evidence of infection with subsequent periods of observation varying from five months to four years. An over-all mortality rate of 21.7 per cent for this series compares favorably with other series previously reported. Penicillin is the specific therapeutic agent of choice in the majority of cases. It is advisable to administer the drug in doses which will give a blood level five to ten times the minimal amount effective in vitro. In the treatment of relapses a substantial increase in both the daily dose and the duration of treatment should be made regardless of the in vitro sensitivity of the organism. Streptomycin should be employed in cases which involve gram-negative organisms or in which penicillin resistance has been demonstrated by in vitro laboratory tests. Sulfonamide compounds have proved to be far inferior to penicillin and at present are to be considered as therapeutic agents only after adequate penicillin and streptomycin therapy have failed.

Hypertensive Disease of Pregnancy.—Peet and Isberg treated 28 hypertensive women between the ages of 16 and 38 years by bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy. These women subsequently experienced thirty-four pregnancies. Of 18 patients who began pregnancy with normal blood pressures, 17 gave birth to 18 normal infants; 15 of these women were still maintaining normal blood pressure at a recent examination, averaging 2.7 years since delivery and 6.3 years since operative intervention. On the contrary, of the remaining 10 patients who started pregnancies with blood pressure above 150 systolic and 90 diastolic, only 2 delivered living infants at term. In none of the 18 patients who responded to splanchnicectomy by maintaining normal blood pressure after operation and who subsequently became pregnant did toxemia of pregnancy develop. No splanchnicectomized woman suffered any late, harmful vascular effects as the result of pregnancy. Five women with toxemia superimposed on prepregnant hypertension have been treated by splanchnicectomy performed during the second trimester of pregnancy. Subsequent to operation in 2 of these patients the toxemias disappeared and normal blood pressure was achieved for the duration of the pregnancies and during a long postpartum follow-up period. In the remaining 3 cases the operation exerted no influence on the toxemia. In 100 of 452 hypertensive women on whom splanchicectomy was performed, elevated blood pressure was first noted at the time of pregnancy; in the remaining 352 in this series onset of hypertension had no relation to pregnancy. There was little variance in the disease pictures of the two groups, but there was significant difference in the over-all response to splanchnicectomy. Both groups responded well to the operative procedure, but the end results were definitely better for the women whose hypertensive state began during pregnancy. The young hypertensive woman who wishes to have children should first have the hypertensive vascular disease treated by splanchnicectomy. If she maintains normal blood pressure for one year after operation, she may become pregnant with reasonable safety and with excellent chances for giving birth to a normal infant.

American Journal of Psychiatry, New York

105:801-880 (May) 1949

One Thousand Unsuccessful Careers. A. W. Stearns and A. D. Ullman.—p. 801.
*Study of One Thousand Psychotic Veterans Treated with Insulin and Electric Stock. S. Paster and S. C. Holtzman.—p. 811.
Follow-Up Studies of Shock-Treated Patients. J. K. Morrow and J. P. King.—p. 815.
Seven Years of Experience with Modified Insulin Treatment in Neuroses and Early Psychoses. W. Sargant.—p. 821.
Orthopedic and Neurological Follow-Up Study of Vertebral Fractures in Shock Therapy. P. Polatin and L. Linn.—p. 825.
Effect of Electroconvulsive Therapy on Water Metabolism in Psychotic Patients. M. D. Altschule and K. J. Tillotson.—p. 829.
Myanesin in Electric Stock: Studies in Rabbits and Man. W. L. Holt Jr., M. Rinkel, M. Greenblatt and R. Anderson.—p. 834.
Note on Validity of Wechsler-Bellevue Scatter. G. R. Pascal and J. B. Zeaman.—p. 840.
Incidence of Allergy in Psychotic Reactions. R. M. McAllister and A. O. Hecker.—p. 843.

Psychotic Veterans Treated with Insulin and Electric Shock.—Paster and Holtzman report on 1,000 psychotic veterans who were given electric shock therapy, insulin shock therapy or a combination of the two in sequence following a period of observation during which they had revealed no tendency toward spontaneous improvement. The large percentage of social recoveries obtained in this group testifies to the efficacy of the shock therapies in the functional psychotic reactions incurred in wartime. The therapeutic superiority of insulin shock is revealed in the greater number of social recoveries obtained when it is used either alone or following unsuccessful treatment with electric shock. Insulin is more effective than electric shock in the treatment of paranoid and catatonic schizophrenia. The remissions obtained with insulin treatment are more lasting. Psychotic reactions precipitated under the stress of combat responded somewhat better to shock therapy than did those precipitated under noncombat, environmental stress. The well integrated prepsychotic personality had a favorable prognosis. The favorable rate of recoveries reported in this study may be related to the fact that the veterans constituted a group in whom the psychotic reactions were precipitated under great emotional stress.

Annals of Surgery, Philadelphia

129:417-544 (April) 1949

Preliminary Report on Advantages of Small Stoma in Partial Gastrectomy for Ulcer. H. W. Porter and Z. B. Claman.—p. 417,
Operative Treatment of Pectus Excavatum. M. M. Ravitch.—p. 429.
*Treatment of Acute Anuria with Evaluation of Peritoneal Lavage. I. A. Fields, H. E. Martin, D. G. Simonsen and others.—p. 445.
Glucose Assimilation During Anesthesia and Surgery. M. D. Pareira and J. G. Probstein.—p. 463.
*Prophylaxis of Ovarian Cancer. H. Speert.—p. 468.
*Rationale of Therapy in Acute Vascular Occlusions Based upon Micrometric Observations. W. B. Martin, H. Laufman and S. W. Tuell.—p. 476.
Treatment of Carbuncles by Local Injection of Penicillin. T. H. Bate.—p. 494.
Complete Excision of Pelvic Viscera in Male for Advanced Carcinoma of Sigmoid Invading Urinary Bladder. A. Brunschwig. —p. 499.
Adamantinoma of Mandible: Case Report. D. Catlin.—p. 505.
Spontaneous Rupture of Esophagus. J. M. Beal Jr.—p. 512.
Congenital Intestinal Atresia. E. E. Jemerin and C. R. Halkin.—p. 517.
Multiple Lipomas of Stomach and Duodenum. N. W. Fawcett, V. L. Bolton and E. F. Geever.—p. 524.
Anomalous Insertion of Right Hepatic Duct into Cystic Duct: Report of Case and Review of Literature. M. W. Kobak and R. B. Bettman.—p. 528.
Primary Inflammation of Appendices Epiploicae with Review of Literature and Report of 6 Additional Cases. T. P. Marinis and J. H. Cheek.—p. 533.
Angiosarcoma of Colon with Case Report. C. A. Steiner and L. H. Palmer.—p. 538.

Peritoneal Lavage in Acute Anuria.—Fields and associates report treatment of acute anuria in 6 patients with potentially reversible tubular lesions and in 1 patient with acute glomerulonephritis. Four of the patients died. Those who lived probably would have survived without peritoneal or gastric lavage. Peritoneal lavage was effective in removing substantial amounts of nitrogenous waste products and helpful in adjusting a disturbed electrolyte pattern, especially potassium, an indirect means for supplying dextrose. The disadvantages of peritoneal lavage were the technical nature of the procedure, which required constant and expert supervision and special nursing, peritoneal contamination (appearance of bacterial organisms in the outflow fluid) in nearly all cases in which lavage was continued for more than four days and absorption of fluid from the peritoneal cavity, which occurred if hypertonic intravenous fluids were administered simultaneously. Gastric lavage, used as the primary lavage method in 1 case, was much less effective than peritoneal lavage but did not have the latter's disadvantages. Acute pulmonary edema was the immediate cause of death in 4 patients. In 6 of the 7 patients generalized edema developed. Peritoneal or gastric lavage is used only if the patient shows some deleterious effects from nitrogen retention or electrolyte disturbance, particularly hyperpotassemia.

Prophylaxis of Ovarian Cancer.—Speert studied case histories of the last 260 patients with cancer of the ovary seen in the Sloane Hospital to determine the proportion of persons who had had previous relevant operations. There were 67 who had undergone previously 87 such relevant operations: 52 lower abdominal, 24 vaginal and 5 mammary. There were 9 cases in which radiotherapy was used. Thus 26 per cent of patients had undergone previous operations which permitted either removal of the ovaries or their inspection or palpation with the patient under anesthesia. Some of the tumors appeared within so short a time after the original operation as to suggest the possibility of their having been present at that time. The author recommends that every opportunity be utilized for pelvic examination under anesthesia of all middle-aged or elderly women and that all palpable adnexal masses in postmenopausal women be considered an indication for exploratory laparotomy. Ovarian cancers have appeared in women subsequent to pelvic irradiation for benign conditions, but available data provide no clear evidence that radiant energy is carcinogenic for the human ovary.

Acute Vascular Occlusions.—Martin and associates employed direct micrometry of small caliber vessels in dogs to determine the effects of various therapeutic measures on the behavior of these vessels following main stem occlusions. Experiments with sympathectomized specimens indicate that the afferent and efferent fibers of both arteries and veins are largely responsible for the patterns of response following occlusions, while the pressure gradient of blood flow through the vascular tree becomes important only when the spastic impulses are weak enough to be overcome by the intravascular pressure. Such a situation accounts for venous engorgement during venous occlusion in the presence of increased tonus in the vein wall. Oxygen therapy was found to have no effect on vessel caliber. Papaverine hydrochloride was found to be of value in releasing some of the reflex arterial vasospasm in venous occlusion if used before thrombosis occurred. The drug was of value in arterial occlusions only when collateral arteries existed above the occlusion. Once an occlusion was released, the drug eradicated residual spasm in the small vessels. Tetraethylammonium chloride in non-shock-producing doses counteracted the vasospastic effects following acute venous occlusion in only 50 per cent of cases; in acute arterial occlusions it was entirely without value. Sludge formation occurs within a relatively short time after either arterial or venous occlusion. It appears to be a precursor to thrombosis. Heparin and dicumarol® prevent thrombus formation in such cases but do not alter the character of sludge appreciably. The fact that vasodilating agents are not capable of producing a favorable effect in thrombosed small vessels implies that the use of anticoagulants should be an integral part of therapy in acute main stem occlusions. Regional sympathetic denervation eradicates the pattern of small vessel spasm to an extent unequalled by the vasodilators. Once an occlusion is released, such drugs are usually able to counteract residual vasospasm. Regulation of arterial caliber following occlusion is primarily an expression of sympathetic stimulation and secondarily that of blood flow.

Archives of Dermatology and Syphilology, Chicago

59:367-492 (April) 1949

Dermatologist and Psychiatrist. A. H. Gottesman and K. Menninger. —p. 367.
History of Dermatology, 1847 to 1947. O. S. Ormsby.—p. 374.
Extensive Blue Patchlike Pigmentation: Morphologic Variant of Blue Nevus? Persistent Extrasacral Mongolian Blue Spot? Diffuse Mesodermal Pigmentation? H. Pariser and H. Beerman.—p. 396.
Steroid Hormones: Their Fungistatic and Genestatic Effect on Pathogenic Fungi. F. Reiss.—p. 405.
Practical Medical Mycology: Culture of Fungi as Office Procedure. J. W. Wilson and O. A. Plunkett.—p. 414.
Roentgen Ray Treatment of Eye: Further Experiences. H. S. Alden, J. W. Jones and J. Rankin.—p. 430.
*Role of Spectacle Lenses in Production of Cutaneous Changes, Especially Epithelioma. E. F. Corson, G. M. Knoll, H. A. Luscombe and H. B. Decker.—p. 435.
*Estrogenic Ointments: Cutaneous Effects of Topical Applications of Natural Estrogens, with Report of 321 Biopsies. J. J. Eller and W. D. Eller.—p. 449.
Measurement of Skin: President's Address. J. G. Hopkins.—p. 465.
Relation of Exit Dose and Other Dosage Factors to Roentgen Injuries. J. C. Shafer, C. B. Braestrup and J. K. Fisher.—p. 472.
Familial Pemphigus Vulgaris: Report of Case. O. B. Miller and L. J. Frank.—p. 484.

Cutaneous Changes from Lenses.—Corson and co-workers report 12 patients, 8 men and 4 women between the ages of 43 and 76, in whom cutaneous changes were believed to have been caused by the heat or chemical rays conducted to the cheek by spectacle lenses—a "burning glass" effect. In 7 of the cases the condition was proved by biopsy to be basal cell cancer, and in 2 cases it was clinically an epithelioma. Keratoses were present in 1 case and chronic actinic dermatitis in 2 cases. Refracted light conducted from the upper to the lower rims of spectacle lenses is observed to produce an elevation of temperature at the spot where it focuses on the skin. This focus is not always a perfect one and varies somewhat in shape and position, in direct accordance with changes in the source of light and with the movements of the person. The correspondence of the focal area with the cutaneous changes would seem to be more than a coincidence. Even though exposure to sharp focus is brief, if it is repeated habitually it may exert a positive effect. It is believed that glasses without rims, which especially refract this beam, are largely responsible for these effects, but even this style of spectacles can be worn safely without structural change if rim black® is carefully applied to the upper or lower edges of the lenses.

Estrogenic Ointments.—The Ellers studied the cutaneous effects of topical applications of ointments containing a natural estrus-producing substance derived from the urine of pregnant mares on 36 persons, 30 women between the ages of 20 to 79 and 6 men aged over 55. The topical application of this natural estrogenic substance had a direct effect on the epidermis of postmenopausal women. No changes in the skin were observed in young women with normal endocrine function or in the men. The effect on the epithelium was proportionate to the concentration of the estrus-producing substance in the ointment and to the duration of contact. Concentrations of 242 and 484 international units per gram (7,500 and 15,000 international units per ounce) used by inunction, regularly produced definite and consistent proliferation of the epithelium. These effects were first noted at some time between ten and thirty days, reached their maximum in thirty to fifty days and did not progress thereafter. The proliferative changes of the epidermis were evidenced by an increase in the number of cell layers and the reappearance of the epidermal pegs. The epithelial cells themselves showed an increase in size of both nuclei and cytoplasm. Anaplasia, mitosis or other abnormal change were not noted. Vaginal smears from 17 postmenopausal patients, used as an indicator of systemic absorption, showed no changes in 4 cases, barely perceptible changes in 12 and a definite, but minimal change in 1. Less sensitive tissues, such as the mammary glands, showed no changes. The control inunction of white petrolatum free of the estrus-producing substance did not produce demonstrable miscroscopic changes in the skin. Minimal proliferative changes were induced by this ointment when used either by application or by inunction.

Archives of Internal Medicine, Chicago

83:249-362 (March) 1949

*Management of Lower Nephron Nephrosis: Report of 6 Cases. W. S. Hoffman and D. Marshall.—p. 249.
*Hyperchloremic Acidosis and Nephrocalcinosis: Syndrome of Pure "Lower Nephron" Insufficiency. E. M. Greenspan.—p. 271.
Extracellular Fluid in Cardiac Edema and Ascites. L. R. Ferraro, M. M. Friedman and H. E. Morelli.—p. 292.
Hepatic Function During Hypoproteinemia of Renal Disease. R. I. Boyd.—p. 298.
*Epidemic Pleurodynia: Clinical and Etiologic Studies Based on 114 Cases. J. J. Finn Jr., T. H. Weller and H. R. Morgan.—p. 305.
Purpura Hemorrhagica Associated with Sarcoidosis. C. A. Ribaudo, T. J. Gilligan and A. Rottino.—p. 322.
Pathogenesis of Circulatory Failure in Rocky Mountain Spotted Fever: Alterations in Blood Volume and Thiocyanate Space at Various Stages of Disease. G. T. Harrell and J. K. Aikawa.—p. 331.
Surgical Treatment for Hypertensive Complications of Advanced Renal Disease. E. C. Persike, R. W. Lippman, T. Addis and Others.—p. 348.
Anthropathology of Arterial Tension. B. H. Kean and J. F. Hammill.—p. 355.

Lower Nephron Nephrosis.—Hoffman and Marshall define lower nephron nephrosis as a syndrome of severe oliguria or anuria following an initial shocklike picture and producing renal insufficiency, which often progresses to death in uremia. Hemoglobin or myoglobin, or their derivatives, are less soluble in acid than in neutral or alkaline solutions; they tend to precipitate as casts in the lower nephron, where concentration and acidification take place, and may block the tubular lumens in this region or damage the tubular cells. The kidneys are edematous, the cortex being pale and swollen in contrast with the medulla, which is darker than normal. Microscopically, the principal lesion is confined to the lower cortex and boundary zone and consists chiefly of degeneration and necrosis of the cells of the ascending loop of Henle and distal convoluted tubules, along with interstitial edema and infiltration of cells. This picture has been seen oftenest after crushing injuries to muscles, after transfusions with incompatible blood and after intoxications with sulfonamide drugs, but it also has been described after other types of severe insults to the body, such as operative shock, hemorrhage, hemoglobinuric fever, chemical and thermal burns, uteroplacental damage, alkalosis and high altitude anoxemia. The authors treated 6 patients with lower nephron nephrosis by a regimen that included a deliberate induction of edema of nearly normal electrolyte composition for the purpose of diluting the accumulating intoxication products. Other measures were designed to keep the patient in a good state of nutrition. Five of the 6 patients recovered; the sixth died in uremia and heart failure five days after the onset of diuresis. Four of the recovered patients had complete restoration to normal renal function. One patient, a child 2 years of age, still had renal insufficiency nearly four months after the onset of diuresis. Observations lead to the belief that the major lesions are diminished renal blood flow and loss of specific function of the lower portion of the nephron. Recovery appears to be initiated by an increase in effective renal blood flow and to be continued more slowly by improvement in specific function of the damaged tubules.

Nephrocalcinosis.—Greenspan says that the term nephrocalcinosis has been used in recent years to designate bilateral generalized calcification within the renal parenchyma. On roentgenologic examination the calcifications are visible as clumps of submiliary, stippled, cauliflower-like calcium deposits in the renal medullas. This presentation is based on the observation and treatment of this unusual biochemical and clinical syndrome occurring in a man aged 44. His renal lesion was associated with an unusual form of chronic discrete lower nephron insufficiency manifested by isosthenuria, diminished ammonia excretion and fixed urinary alkalosis in the presence of a blood acidosis, hyperchloremia and relatively good glomerular function. The patient was successfully treated for almost three years with a regimen employing sodium citrate and citric acid. A brief discussion of the physiologic mechanism of lower nephron insufficiency is included, as well as a synopsis of the differential diagnosis of this lesion. The role of sulfathiazole as a possible etiologic factor in the production of nephrocalcinosis is discussed, because in the patient whose case is presented the disorder developed subsequent to treatment of pneumonia with standard doses of sulfathiazole.

Epidemic Pleurodynia.—Finn and his associates say that during the late summer and early fall of 1947, an epidemic acute febrile illness characterized by headache, pyrexia and paroxysmal pain in the region of the diaphragm occurred in Massachusetts. Clinically it closely resembled a malady first described in Iceland by Finsen in 1856, who called it "pleurodynia." The same syndrome has since been variously designated as "Bornholm disease," "epidemic muscular rheumatism," "acute benign dry pleurisy," "epidemic pleuritic pain," "Bamle disease" and "devil's grip." The last name was based on the description of the pain in the chest experienced by one of Dabney's patients in the first outbreak reported from the United States. The authors present the clinical features of 114 cases of epidemic pleurodynia observed at the Boston City Hospital during the summer of 1947. Complications included involvement of the central nervous system, orchitis and pericarditis. Efforts to isolate a virus from some cases in the present outbreak were unsuccessful. The various bacteriologic and serologic studies added no information regarding the etiologic basis of epidemic pleurodynia.

Archives of Pathology, Chicago

46:503-608 (Dec.) 1948

Cytologic Changes in Bronchogenic Carcinoma Following Treatment with Nitrogen Mustard (Methyl-Bis [Beta-Chloroethyl] Amine). E. A. Gaensler, D. G. McKay, P. F. Ware and J. P. Lynch.—p. 503.
Effect of Nitrogen Mustard in Mycosis Fungoides. M. Block and J. C. Murphy.—p. 519.
Bronchial Adenoma Producing an "Alveolar Cell Carcinoma" Pattern. J. H. Cheek and E. E. Muirhead.—p. 529.
Experimental Atherosclerosis: X. Effect of Desoxycorticosterone Acetate on Cholesterol Content of Blood, Aorta and Liver of Rabbit. M. Bruger and B. E. Lowenstein.—p. 536.
Silvering of Lepra Bacilli in Tissues. F. L. Blanco and G. L. Fite.—p. 542.
Splenic Cysts. H. T. Tamaki.—p. 550.
Effects of Folic Acid Deficiency and Folic Acid Antagonist on Chicks. E. Woll.—p. 559.

Archives of Surgery, Chicago

58:411-564 (April) 1949

- *Hiatus Hernia. G. G. Richards and K. A. Crockett.—p. 411.
- Incidence of Hiatus Hernia and Associated Lesions Diagnosed by Roentgen Ray. I. B. Brick.—p. 419.
- **Differential Diagnosis of Hiatus Hernia and Coronary Artery Disease.* A. M. Master, S. Dack, J. Stone and A. Grishman.—p. 428.
- Granular Cell Myoblastoma of Anterior Rectus Sheath. S. S. Rogers. —p. 450.
- Treatment of Peptic Ulceration by Vascular Ligation. W. Q. Wood. —p. 455.
- Aspiration of Blood from Pericardium in Treatment of Acute Cardiac Tamponade After Injury: Further Experience, with Report of Cases. M. M. Ravitch and A. Blalock.—p. 463.
- Tetanus Treated as Respiratory Problem. V. C. Turner and T. C. Galloway.—p. 478.
- Acute Pancreatitis and Its Sequelae. T. J. Anglem and W. F. Lee Jr. —p. 484.
- Pathogenesis of Postoperative Pulmonary Atelectasis: Experimental Study. R. T. Shields Jr.—p. 489.
- Nonsuture Method for Vascular Anastomosis Utilizing Murphy Button Principle. H. H. LeVeen.—p. 504.
- Lymphosarcoma of Duodenum: Report of Case; Review of Literature. M. M. Copeland and D. J. Greiner.—p. 511.
- Benign Nonepithelial Tumors of Stomach. J. Rabinovitch, D. Grayzel, A. J. Swyer and B. Pines.—p. 529.
- Surgical Forum. R. Elman.—p. 539.
- Diseases of Growing and Adult Bone. J. A. Seigling.—p. 541.
- Tuberculosis of Bones and Joints. A. DeF. Smith.—p. 546.
- Infantile Paralysis. C. E. Irwin.—p. 561.

Hiatus Hernia.—Richard and Crockett say that 24 cases of hiatus hernia were observed at the Salt Lake Clinic during the last eighteen months. The ages of the patients varied between 33 and 68 years, but only 3 were under 45. There were 17 men and 7 women. Other reports indicate a greater frequency of this condition in women than in men. Two thirds of the 24 patients were overweight. All except 1 of the patients complained of either gastric of substernal pain; 7 of these had radiation of the pain into the left shoulder or arm. Only 1 had dysphagia. Two patients had gastrointestinal hemorrhages with anemia. The duration of symptoms was six months to twenty years. The average duration was five and one-third years. Seven patients had been treated for coronary heart disease, 5 for disease of the gallbladder and 7 for peptic ulcer; 7 received no definite treatment. Hiatus hernia must be kept in mind in any case of atypical angina pectoris, duodenal ulcer, dysphagia, disease of the gallbladder, anemia from gastrointestinal bleeding, or obscure upper abdominal pain or pain in the lower part of the chest which might be associated with increased intra-abdominal pressure. The index of suspicion has to be accompanied with a special technic of fluoroscopy if the true incidence of this disorder is to be appreciated.

Differential Diagnosis of Hiatus Hernia and Coronary Disease.—Master and co-workers point out that the differential diagnosis of hiatus hernia and coronary artery disease is of great practical importance, because hiatus hernia may produce symptoms simulating angina pectoris and occasionally acute coronary occlusion. The two conditions, which occur with increasing frequency in the same age group, may coexist; therefore the observation of one does not exclude the other. An intensive study of the cardiac status was made in 57 consecutive patients with proved hiatus hernia of the stomach. The examination included a complete history and physical examination, teleroentgenogram, roentgenoscopy, resting electrocardiogram including augmented unipolar limb and Wilson precordial leads, the two step exercise test and the 10 per cent anoxemia test. Evidence of organic heart disease was found in almost two thirds of the patients. On the basis of symptoms the patients were divided into four groups: group 1, 15 patients with purely gastrointestinal symptoms; group 2, 29 patients with both gastrointestinal and cardiac complaints; group 3, 3 patients with only cardiac complaints, and group 4, 10 patients with symptoms attributable to anemia secondary to hemorrhage. Hiatus hernia not infrequently may precipitate coronary insufficiency even in the presence of normal coronary arteries if hemorrhage, severe anemia or shock develops. The authors emphasize the value of functional tests for the recognition of coronary insufficiency and especially of the two step exercise test in the differentiation of these two conditions. A positive reaction to the two step test may be the only objective sign of coronary artery disease. Although uncomplicated hiatus hernia does not produce typical anginal pain on effort unless there is associated cornoary artery disease, exceptions do occur and objective functional tests are necessary for evaluation of thoracic pain. Hiatus hernia may produce pain referred through reflex autonomic pathways to the wall of the chest and the left arm. The functional tests in such instances do not yield evidence of coronary insufficiency.

Gastroenterology, Baltimore

12:355-544 (March) 1949. Partial Index

- Construction and Use of Safe Diagnostic Optical Esophagoscope. R. Schindler.—p. 355.
- The Joys of Taking a History: Three Case Reports. W. C. Alvarez. —p. 368.
- Preliminary Report of Clinical Trial of Orally Administered Hog Duodenum Powder in Treatment of Chronic Ulcerative Colitis. M. H. Streicher, M. I. Grossman and A. C. Ivy.—p. 371.
- The Pancreas: Contributions of Clinical Interest Made in 1947. R. Elman and R. A. Lemmer.—p. 375.
- "Chronic Gastritis:" Study of Relation Between Mucosal Changes and Symptoms. W. E. Ricketts, W. L. Palmer and J. B. Kirsner. —p. 391.
- Turbidimetric Estimation of Serum Colloids in Differential Diagnosis of Hepatobiliary Disease. F. T. Maher, A. M. Snell and F. D. Mann. —p. 394.
- Analysis of 1500 "Routine" Proctosigmoidoscopic Examinations. H. H. Steele and C. H. Brown.—p. 419.
- Alterations in Colonic Function in Man Under Stress. T. P. Almy, F. Kern Jr. and M. Tulin.—p. 425.
- Thiamine Excretion Test as Gauge of Dietary Adequancy. G. H. Laing, F. W. Jones, D. Anderson and J. M. Beazell.—p. 450.
- Gastric Excretion of Neutral Red as Influenced by Vagotomy. M. J. Gullickson and D. A. Campbell.—p. 454.
- Hormonal and Vitamin Factors in Intestinal Absorption. T. L. Althausen.—p. 467.
- Peptic Ulcer in Infancy: Report of Case with Hemorrhage and Perforation. B. Margolis, M. Valdes-Dapena and R. S. Boles.—p. 489.

12:545-720 (April) 1949

- Recent Advances in Gastrointestinal Physiology. J. E. Thomas.—p. 545.
- Nocturnal Gastric Secretion in Patients with Gastric Carcinoma: Comparison with Normal Individuals and Patients with Duodenal Ulcer and with Gastric Ulcer. E. Levin, J. B. Kirsner and W. L. Palmer. —p. 561.
- *Influence of Smoking upon Management of Peptic Ulcer Patient. R. C. Batterman and I. Ehrenfeld.—p. 575.
- *Effect of Intravenous Protein Hydrolysates on the Stomach. M. Zweig, K. A. Meyer and F. Steigmann.—p. 586.
- Lethality Rate of Hematemesis and Melena Treated Non-Operatively (Meulengracht's Regimen) and Criteria for Surgical Intervention in Bleeding Peptic Ulcer. J. Pedersen.—p. 597.
- Hepatitis Without Jaundice in Infectious Mononucleosis. R. M. Angle. —p. 617.
- Bacteriological Examination of Duodenal Content with Aid of Special Tube. J. Tomenius.—p. 623.
- Observations on Secretion of Acid by Mouse Stomach in Vitro. H. W. Davenport and V. Jensen.—p. 630.
- Production of Ulcerative Colitis in Dogs by Prolonged Administration of Mecholyl. J. Wener, H. E. Hoff and M. A. Simon.—p. 637.
- Experimental Evaluation of New Gastrointestinal Antiseptic—Sodium Phthalylsulfacetimide. D. Lehr.—p. 648.
- f Several Protein Hydrolysates and Other sub- Therapy. S. M Samis and F. Hollander. —p. 665.
- Is Parietal Cell Secretion Inhibited by Acidosis? V. W. Logan.—p. 671.

Smoking in Management of Peptic Ulcer.—Batterman and Ehrenfeld investigated two problems in the relationship of tobacco smoking to the symptoms and course of the peptic ulcer syndrome: (1) the influence of smoking tobacco on the management of the peptic ulcer patient as measured by the effectiveness of antacid therapy and the incidence of acute exacerbations, and (2) the influence of smoking processed or partially denicotinized tobacco on the course of the peptic ulcer. Their observations were made on 108 patients. They found that patients who continued to smoke had a poor response to treatment, so that the effectiveness of antacid therapy was no greater than 47 per cent. The inadequacy of treatment was reflected in the high incidence (53 per cent) of acute exacerbations. Patients who discontinued smoking or never smoked had an excellent response to antacid therapy, so that the incidence of acute exacerbation decreased to 11.5 and 17.5 per cent, respectively. In a group of 28 patients refractory to an ambulatory regimen of antacid therapy when smoking regular tobacco, the use of a processed or partially denicotinized cigaret resulted in improvement of 22 of the patients, with the incidence of acute exacerbations decreasing from 53.5 to 29 per cent. Reinstitution of smoking tobacco of full nicotine content in 18 patients who had shown improvement with the partially denicotinized tobacco resulted in decreased effectiveness of antacid therapy and an increase in the incidence of exacerbations to a level corresponding to the control level.

Effect of Intravenous Protein Hydrolysates on the Stomach.—Zweig and co-workers studied the effect of intravenously given protein hydrolysates on gastric acidity and motility. In 106 tests performed after injection of various protein hydrolysates increased gastric acidity was obtained in 55 per cent. Factors influencing the acidity were (1) the histamine content, (2) the p_H of the solution and (3) the nature of the diluent used with the protein hydrolysate. Protein hydrolysates in 5 per cent dextrose solution produced gastric stimulation in fewer instances than did those in distilled water. Gastric motility was unaffected by intravenous administration of protein hydrolysates. Neither vagotomy nor thoracic sympathectomy and splanchnicectomy inhibited the gastric response to parenterally given protein hydrolysates. Atropine sulfate in small doses given intravenously did not reduce the gastric acidity stimulated by the infusion of protein hydrolysates; a larger dose, 1/60 grain (1.08 mg.), noticeably decreased the acid response. Stimulation of gastric acid formation by intravenously administered protein hydrolysates is probably accomplished through (1) a relatively high histamine content, (2) an acid p_H, (3) direct action on the gastric glands by the hydrolysate itself or by a liberated hormone or (4) a combination of three foregoing factors.

Georgia Medical Association Journal, Atlanta

38:131-198 (April) 1949

History of Medical Association of Georgia 1849-1880. F. K. Boland. —p. 131.
Our Centennial Meeting. E. H. Greene.—p. 174.

38:199-232 (May) 1949

Value of Uterosacral Ligaments in Uterine Displacements. A. L. Evans and O. S. Cofer.—p. 199.
Catheter Loop Extraction of Ureteral Calculi. C. Eberhart and J. L. Campbell Jr.—p. 201.
*Oral Aureomycin Therapy for Chancroid: Report of Case. C. H. Chen, R. B. Dienst and R. B. Greenblatt.—p. 205.
*Chloromycetin in Therapy of Granuloma Inguinale. R. B. Greenblatt, V. S. Wammock, R. B. Dienst and R. M. West.—p. 206.
Hemolysis in Pernicious Anemia. W. E. Bloomer.—p. 208.
Health Problem in South as Seen by Leader in Organized Labor. W. C. Kendrick.—p. 210.
Should We Adopt Compulsory Medical Care Insurance? R. A. Hohaus. —p. 213.
British Story—First Hand. Elizabeth Wilson.—p. 216.

Aureomycin for Chancroid.—Chen and associates point out that aureomycin has a therapeutic range overlapping that of streptomycin. They have reported its amazing results in granuloma inguinale, which to that time was known to be resistant to penicillin and to be best treated with streptomycin. Aureomycin was given to a man aged 26, in whom clinical data, positive Ducrey skin test and negative reactions to Frei and Kahn tests justified the diagnosis of chancroid. Aureomycin capsules were then given orally with a daily dosage of 1 Gm. (250 mg. four times a day) for five days. The pain and soreness which had been the cause of his disability in walking left him completely the day following medication; the redness in the inguinal regions disappeared, though the swellings had not decreased substantially. The penile sore was dry and no longer tender. On the third day the inguinal swellings decreased to about half of the original size and the penile lesion completely healed, with shedding of the crust and epithelization. The inguinal swellings subsided by the seventh day. Toxic reactions were not observed during the course of treatment. It is obvious that after an illness of months, chances that spontaneous healing would occur in this patient within such a short time were slight. It is fair to attribute the results to aureomycin.

Chloramphenicol (Chloromycetin®) in Therapy of Granuloma Inguinale.—According to Greenblatt and associates, chloramphenicol (chloromycetin®) is a pure, crystalline antibiotic suplied in capsules containing 250 mg. to be administered orally. The arbitrary total dosage of 20 Gm., which the authors used in their first series of patients with granuloma inguinale, was chosen because it is comparable to the minimum effective dose of aureomycin and because it has been shown that approximately this amount of the drug is necessary to cure typhoid. The authors have used chloramphenicol in 5 patients with granuloma inguinale with excellent immediate results and without toxic effects. It will be necessary to follow these patients a long time, and to treat more patients with this disease, varying the schedule in order to ascertain the minimum amount of the drug which will produce a cure in the majority of the cases. This drug has the advantage over streptomycin in that it can be given orally and over aureomycin in that it has not caused nausea and vomiting.

Journal Industrial Hygiene & Toxicology, Baltimore

31:67-122 (March) 1949

Absorption and Elimination of Carbon Disulfide in Man. J. Teisinger and B. Souček.—p. 67.
Physiological Response of Man to Ammonia in Low Concentrations. L. Silverman, J. L. Whittenberger and J. Muller.—p. 74.
Short-Term Toxicity Tests on Mono and Di Methyl Ethers of Hydroquinone. H. C. Hodge, J. H. Sterner, E. A. Maynard and J. Thomas. —p. 79.
Theory and Pathology of Carbon Disulfide Poisoning. R. H. DeMeio, H. Brieger and M. H. F. Friedman.—p. 93.
Improved Animal Dusting Apparatus. F. Princi, F. Church and W. McGilvray.—p. 106.
Comparative Toxicity of Methacrylonitrile and Acrylonitrile. W. A. McOmie.—p. 113.
Observations on Acute and Chronic Toxicity of Toxaphene in the Dog. R. W. Lackey.—p. 117.

Journal of Investigative Dermatology, Baltimore

12:203-254 (April) 1949

Diodoquin as Topical Therapeutic Agent in Cutaneous Disease. W. Leifer and K. Steiner.—p. 203.
Adrenotropic Receptors of Human Skin. H. Janowitz, R. R. Sonnenschein and M. I. Grossman.—p. 205.
Exfoliative Dermatitis from Contact with DDT. E. L. Higgins and D. J. Kindel.—p. 207.
Importance of Inhalant Allergens in Atopic Dermatitis. L. Tuft.—p. 211.
Aqueous Vitamin A in Acne Vulgaris. D. M. Davidson and A. E. Sobel.—p. 221.
Relative Incidence of Candida Albicans on Skins of Persons With and Without Skin Diseases. R. M. Marwin.—p. 229.
Diffuse Lepra. M. E. Obermayer, S. C. Bonar and R. Rosenquist.—p. 243.
Physical Properties of Human Sebum. E. O. Butcher and A. Coonin. —p. 249.

Journal-Lancet, Minneapolis

69:155-196 (May) 1949

Poisoning in Children: Newer Methods of Treatment. W. W. Lueck. —p. 155.
Ovarian Tumors in Infancy and Childhood. T. C. Chisholm and O. S. Wyatt.—p. 160.
Some Problems in Dealing with Parents. W. Fleeson and E. K. Clarke. —p. 163.
Craniotabes. R. B. Tudor.—p. 165.
*Diphtheria Trends in Minnesota. S. C. Siegel.—p. 167.
Late Rickets—with Moderate Vitamin D Resistance. D. T. Lindsay. —p. 171.
Treatment of Recurrent Congenital Club Foot. J. D. B. Galloway.—p. 177.
Acute Bacterial Meningitis: Review of Therapy in 198 Cases at Minneapolis General Hospital. S. S. Scherling and E. S. Platou.—p. 181.
Serum Amylase Levels in Mumps. L. Bass and R. B. Tudor.—p. 188.

Trends of Diphtheria in Minnesota.—Siegel says that although diphtheria is no longer the serious problem it was formerly, the disease has not been completely eradicated. A table listing the diphtheria and poliomyelitis cases occurring in Minnesota in the years between 1937 and 1947, inclusive, shows that since 1942 diphtheria has been increasing. In six of the eleven years the cases of diphtheria have been more numerous than those of poliomyelitis. The author reviews 210 bacteriologically proved cases of diphtheria that were observed at the Minneapolis General Hospital in the years 1937 to 1947. Only 38 of the cases concerned children up to 4 years of age, 75 were between 5 and 14 years of age and 97 were 15 years of age or older. The author suggests that this shift in the age incidence of diphtheria may be due to the widespread immunization against diphtheria in infancy, which reduces the incidence of disease and of carriers and thereby decreases natural immunity. In the past, when diphtheria was rampant among the population, older persons maintained their immunity by being exposed to frequent small doses of diphtheria bacilli. Now, with relatively little diphtheria prevalent in the community, one has to depend on artificial immunization. This is clearly shown by the numerous reports of the increased number of Schick-positive adults. The author believes that the shift of diphtheria to older age groups suggests that an immunization program covering a wider age group with occasional booster dosages is necessary. Some recommendations are given in regard to approved immunization procedures.

Journal of Nat. Cancer Inst., Washington, D. C.

9:379-452 (April-June) 1949. Partial Index

Blood Histamine in Leukemia and Erythremia. M. B. Shimkin, L. Sapirstein, F. R. Goetzl and others.—p. 379.

Dehydropeptidase Activity in Tumors. J. P. Greenstein and F. M. Leuthardt.—p. 389.

Carbamates in Chemotherapy of Leukemia: III. Relationship Between Chemical Structure and Anti-Leukemic Action of Series of Urethan Derivatives. H. E. Skipper and C. E. Bryan.—p. 391.

*Study of Colon of Apparently Well Women. M. Ortmayer and M. Connelly.—p. 399.

Effect of Local Roentgen Irradiation on Biological Behavior of Transplantable Mouse Carcinoma: I. Increased Frequency of Pulmonary Metastasis. H. S. Kaplan and E. D. Murphy.—p. 407.

Histochemical Demonstration of Esterase. M. M. Nachlas and A. M. Seligman.—p. 415.

Observations on Mitochondria of Normal and Neoplastic Cells with Electron Microscope. A. J. Dalton, H. Kahler, M. G. Kelly and others.—p. 439.

Study of Colon in Apparently Well Women.—Ortmayer and Connelly report statistical data obtained from the examination of the colon in 1,014 women who considered themselves well. In addition to the usual physical and laboratory examination, sigmoidoscopic and roentgenologic examinations of the colon were made. Since the detection of carcinoma or its possible precursors was the aim of this study, the polyps found by roentgen examination and proctosigmoidoscopy are first reviewed. In the 1,014 patients, only 2 such tumors were diagnosed by the roentgen method; 1 low in the ampulla, which had been seen previously at proctoscopy, and the other in the transverse colon. Polyps originating between the anal crypts and the external anal ring were found in 5 patients. Obviously, neither roentgen ray nor sigmoidoscopy were needed to find these, because they were either seen in the anal ring or were readily palpated and usually could be delivered externally. Nineteen polyps were found at proctosigmoidoscopy above the anal papillae in 18 patients. Statistically, the discovery of only 2 polyps by roentgen examination of the colon in 1,014 well women gives an incidence so low as to be insignificant. Routine use of the barium enema prior to roentgen study in the apparently well female population is scarcely worth the time, inconvenience and expense. Fortunately, a considerable proportion of the tumors of the colon (figures vary from 60 to 80 per cent) lie in the lower sigmoid and rectum accessible to the 25 cm. sigmoidoscope. All 19 of the polyps detected by this method were seen below the 20 cm. height. They all were under 1 cm. in size. One of these small polyps was definitely carcinoma, 3 were totally benign, 8 were probably benign and 7 were partly carcinomatous and partly benign. The authors consider that their detection of small polyps in the rectum or rectosigmoid in 1.8 per cent of apparently well women justifies routine sigmoidoscopy in cancer detection centers and in all thorough health surveys. This procedure should be followed at least until it is determined whether it is of practical value in the discovery of early (small) asymptomatic malignant growths. Routine roentgen ray study of the colon is not considered justifiable in asymptomatic subjects.

Journal of Neurophysiology, Springfieid, Ill.

12:161-224 (May) 1949

Synchronization of Spontaneous Electrical Activity of Cerebrum by Barbiturate Narcosis. R. L. Swank.—p. 161.

Response of Mammalian Vestibular Neurons to Horizontal Rotation and Caloric Stimulation. B. Gernandt.—p. 173.

Characteristics of Electrical Activity of Human Corpus Striatum and Neighboring Structures. R. Hayne, R. Meyers and J. R. Knott.—p. 185.

Electromyographic Study of Spasticity. D. B. Lindsley, L. H. Schreiner and H. W. Nagoun.—p. 197.

Role of Brain Stem Facilitatory Systems in Maintenance of Spasticity. L. H. Schreiner, D. B. Lindsley and H. W. Magoun.—p. 207.

Effects of Changes in Ionic Environment on Action Potential of Sympathetic Ganglion. J. W. Saunders and J. D. Sinclair.—p. 217.

Journal of Nutrition, Philadelphia

37:393-546 (April) 1949. Partial Index

Utilization of Nicotinic Acid by Pregnant Women. E. I. Fraxier, T. Porter and M. J. Humphrey.—p. 393.

Determination of Early Thiamine-Deficient States by Estimation of Blood Lactic and Pyruvic Acids After Glucose Administration and Exercise. M. K. Horwitt and O. Kreisler.—p. 411.

Growth and Maintenance of Dogs Fed Amino Acids as Source of Dietary Nitrogen. R. H. Silber, E. E. Howe, C. C. Porter and C. W. Mushett.—p. 429.

Oral Manifestation in Rats Fed Synthetic Diets Deficient in Pantothenic Acid and Biotin: I. Methods and General Gross Symptoms. D. E. Ziskin, M. Karshan, G. Stein and D. A. Dragiff.—p. 457.

Long-Term Experiments at or Near Optimum Level of Intake of Vitamin A. H. C. Sherman and H. Y. Trupp.—p. 467.

Effects of Various Levels of Thiamine and Riboflavin Intake upon Utilization of Casein, Supplemented with Methionine. H. L. Mayfield and M. T. Hedrick.—p. 475.

Effect of Canning, Roasting and Corning on Biological Value of Proteins of Western Beef, Finished on Either Grass or Grain. H. L. Mayfield and M. T. Hedrick.—p. 487.

Comparative Effectiveness of Vitamin B_{12}, Whole Liver Substance and Extracts High in APA Activity, as Growth Promoting Materials for Hyperthyroid Animals. J. J. Betheil and H. A. Lardy.—p. 495.

Sulfur Amino Acid Requirement of Infant. A. A. Albanese, L. E. Holt Jr., V. I. Davis and others.—p. 511.

Effect of Oral Administration of Rutin on Blood, Liver and Adrenal *Ascorbic Acid and on Liver and Adrenal Cholesterol in Guinea Pigs.* E. Papageorge and G. L. Mitchell Jr.—p. 531.

Journal Pharmacology & Exper. Therap., Baltimore

95:421-536 (April [Part I]) 1949. Partial Index

*Effects of Feeding Uranium Nitrate Hexahydrate in Diets of Breeding White Rats. E. A. Maynard, C. Randall, H. C. Hodge and J. K. Scott.—p. 421.

Pharmacologic Studies on Causative Agent of Canine Hysteria. J. L. Radomski and G. Woodard.—p. 429.

Effect of Hypoxia on In Vivo Formation of Methemoglobin by Aniline and Nitrite. S. S. Spicer and P. A. Neal.—p. 438.

Adrenergic Blocking Drugs: IV. Antagonism of Epinephrine and Histamine with 2-(2-Biphenyloxy)-2'-Chlorodiethylamine Derivatives. E. R. Loew and A. Micetich.—p. 448.

Study on Mescaline in Human Subjects. K. Salomon, B. W. Gabrio and T. Thale.—p. 455.

Distribution of Radioactivity in Rats After Administration of C^{14}-Labeled Methadone. H. W. Elliott, F. N-H. Chang, I. A. Abdou and H. H. Anderson.—p. 494.

Studies on Fate of Nicotine in Body: VI. Observations on Relative Rate of Elimination of Nicotine by Dog, Cat, Rabbit and Mouse. P. S. Larson, J. K. Finnegan and H. B. Haag.—p. 506.

Control of Experimental Pneumonia with Penicillin: III. Inhalation Therapy of Established Pneumonia, as Related to Blood and Lung Levels. C. E. Wilson, S. H. Durlacher and E. A. Bliss.—p. 509.

95:1-216 (April [Part II]) 1949

Metabolism of Adrenaline. Z. M. Bacq.—p. 1.

Pharmacology of Adrenergic Blockade. M. Nickerson.—p. 27.

Interactions of Drugs and Plasma Proteins. A. Goldstein.—p. 102.

Anticholinesterase Drugs. G. B. Koelle and A. Gilman.—p. 166.

Effects of Feeding Uranium Nitrate Hexahydrate to Breeding White Rats.—According to Maynard and associates there is a double interest in the effects of uranium on the reproductive organs—first, because it is highly toxic heavy metal, and second, because it is radioactive. The plan of this experiment was to observe the effects on reproduction when weanling rats (aged 28 days) were maintained in pairs on diets containing 2 per cent uranium nitrate hexahydrate. A similar group of litter-mated rats were paired in the same fashion to serve as controls. Two groups of 50 pairs of rats were studied for seven months. The growth rate of both male and female rats receiving the 2 per cent uranium nitrate hexahydrate diet was notably depressed. An increased growth occurred, however, when the experimental rats were placed on the control diet seven months after the start of the experiment. Uranium feeding sharply reduced the number of female rats having litters. In addition, the experimental rats had fewer young per litter. When the experimental rats were replaced on the stock diet the females having litters were more productive than the control rats. Females which failed to have litters on the experimental diet did not have litters on the stock diet. Rats fed 2 per cent uranium nitrate hexahydrate exhibited a slightly greater mortality. Uranium nitrate hexahydrate feeding produces irregularity of the estrus cycle. Only 19 of 44 female rats had regular estrus cycles and regular matings while being fed the uranium compound. However, uranium, except in traces, does not cross the placental barrier.

Missouri State Medical Assn. Journal, St. Louis

46:319-388 (May) 1949

*Role of New Analgesic in Surgery. C. Costello and J. McDonald.—p. 333.
Foreign Body in Bladder: Report of Case. B. W. Andrews and M. Goldman.—p. 338.
Phytobezoars, with Gastric Ulcer, Complicated by Intestinal Obstruction. P. A. Knepper and R. B. Bristow.—p. 339.
Examination of Male for Sterility. W. F. Melick.—p. 344.
Double Symmetric Monsters: Thoracopagus Twins, Case Report. J. A. Ossman and H. M. Wiley.—p. 348.
Hoarseness. G. O'N. Proud.—p. 354.
What Are Common Types of Cancer? E. L. Keyes and W. Rindskopf Jr.—p. 356.

A New Analgesic in Surgery.—Costello and McDonald had gained the impression that the debilities which handicap a cancer patient during the terminal stage of his illness are often due more to the hypnotic effect of opiate analgesics than to the disease itself. It was the quest of an analgesic to be administered orally or parenterally which would relieve pain without producing untoward reactions and impairment of body functions that prompted the authors to study a new synthetic analgesic, methadone hydrochloride (adanon hydrochloride®). This analgesic is 6-dimethylamino,4,4-diphenyl,3-heptanone hydrochloride. It is a crystalline powder which is soluble in water and alcohol. The authors present experiences with the use of this drug in 137 patients who were treated at the St. Louis City Hospital on the Washington University surgical service and in the tumor clinic. Satisfactory analgesic effect was obtained in 94.1 per cent of the cases. The dose most commonly employed was 10 mg., and the average period of relief was four hours. Results indicate that, although methadone does not meet all the requisites of the "perfect analgesic," it has many advantages over other such drugs now commonly employed. Three cases are reported as examples of patients in whom treatment with methadone has been beneficial. The authors admit, however, that evidence suggests that the drug is potentially addictive.

New England Journal of Medicine, Boston

240:669-702 (April 28) 1949

*Treatment of Mental Illness at Home by Small Doses of Insulin: Follow-up Report and Appraisal of Results in 26 Cases. N. Cohen.—p. 669.
*Digitalis Bigeminy: Analysis of 50 Cases. E. L. Sagall and L. Wolff.—p. 676.
Streptomycin in Treatment of Extrapulmonary Tuberculosis: Early Results. K. Jellinek.—p. 680.
Practical Considerations of Clinical Oxygen Lack. C. S. Houston.—p. 683.
Oral Surgery. K. H. Thoma.—p. 686.
Regional Enteritis of Duodenum.—p. 692.
Benign Chondroblastoma of Femur.—p. 694.

Small Doses of Insulin in Treatment of Mental Illness.—Cohen maintains that there is a large group of patients who do not require hospitalization and whose mental condition lends itself to insulin subshock treatment. Results with this form of therapy in 12 patients were reported previously. The treatment has been continued, and the number of cases now totals 26. The treatment should be given by a physician who has had training in neuropsychiatry as well as in the shock technics. The initial handling of the patient's fears is frequently a project in itself, and psychotherapy is utilized in helping him accept the treatment. The patient, having fasted four to twelve hours, is given insulin by deep intramuscular injection of 5 to 15 units. The dose may be increased by about 10 units daily until mild hypoglycemic shock, manifested by lassitude, increased perspiration, hunger, thirst and somnolence, is produced. Usually 50 to 100 units of insulin is sufficient to cause appearance of the desired hypoglycemic manifestations in about an hour. The patient is kept in a state of hypoglycemia for thirty to ninety minutes, and the reaction is then terminated by the administration of sugared fruit juice followed by a meal rich in carbohydrates. All but 1 of the 26 patients showed improvement as the result of this treatment, and 17 recovered completely.

Digitalis Bigeminy.—Sagall and Wolff studied 183 cases of bigeminy with regard to the etiologic relationship between digitalis and the coupled rhythm. Bigeminy was associated with digitalis in 50 cases and unrelated to digitalis in 82. In 51 the relation was indeterminate. Bigeminal rhythm is common in patients with or without organic heart disease who have not received digitalis; in 39 per cent it is ventricular extrasystolic in mechanism. Bigeminal rhythm may be induced in patients with organic heart disease by digitalis, and it is almost always due to ventricular extrasystoles. The ventricular extrasystolic bigeminy associated with digitalis differs from that unrelated to digitalis in that the ventricular premature beats are more commonly multifocal and arise in the right ventricle. In nondigitalis bigeminy ectopic contractions arise more frequently in the left, or basal, portions of the ventricles. Digitalis bigeminy occurs in all types of heart disease and with a variety of basic rhythms, but more often it occurs as a complication of rheumatic heart disease and auricular fibrillation. Bigeminy may be induced by purified digitalis derivatives as well as the whole leaf product. Digitalis bigeminy is a sensitive manifestation of toxicity and may appear with a small increase in the maintenance dose. Bigeminy may be the only evidence of digitalis intoxication and may precede, follow or develop simultaneously with other manifestations of toxicity. Bigeminy may be a serious sign of digitalis toxicity and in some cases may herald sudden death.

New York State Journal of Medicine, New York

49:977-1104 (May 1) 1949

*Tetra-Ethyl-Ammonium Chloride in Peripheral Vascular Diseases and Allied Conditions: Its Uses and Limitations. M. M. Fisher.—p. 1033.
Pneumococcal Meningitis. J. K. Meneely Jr.—p. 1040.
Survey of 723 Cases of Cholecystitis and Cholelithiasis. R. Colp and L. J. Lester.—p. 1043.
The Heart in Myotonia Atrophica. S. H. Rinzler.—p. 1048.
Standards for Care of Chronically Ill. A. P. Merrill.—p. 1051.
Use and Abuse of Antithyroid Drugs. B. J. Ficarra.—p. 1055.
Preservation of Thromboplastin Suspensions in Frozen State. R. D. Barnard, G. B. Gordon and H. A. Weitzner.—p. 1057.
Symptomatic Treatment of Allergic Diseases with Neoantergan. E. Schwartz, L. Levin and I. M. Kurtz.—p. 1059.
Sinoauricular Bigeminy. M. Schlachman.—p. 1061.
Congenital Contracture of the Fifth Finger. R. Marton and O. Steinbrocker.—p. 1064.
Effect of Antireticular Cytotoxic Serum on Patients with Osteoarthritis. L. W. Granirer.—p. 1067.
Suggestion for Simplified Ophthalmoscope, Otoscope, Flashlight Diagnosis Instrument. W. A. Greene Jr.—p. 1068.
Bronchiectasis. L. Miscall.—p. 1070.

Tetraethylammonium Chloride. — Fisher treated 582 patients with peripheral vascular disease and allied conditions with tetraethylammonium chloride intravenously in doses varying from 50 to 500 mg. (0.5 to 5 cc.) usually producing the effects of a block of the autonomic ganglions. The higher the blood pressure, the smaller the first dose. After noting the patient's reaction to the first injection, the dose may be increased gradually by 1 cc. or more each time until the maximum effect is attained. Serious toxic effects were not observed with over one thousand five hundred injections. In none of the patients was a pulmonary infarct noted after treatment. There has been significant relief of pain in 52 patients with acute thrombophlebitis; in 26 of these patients, one injection was sufficient to give permanent relief from pain. Thirteen patients with sudden acute arterial occlusion showed rapid improvement following the use of tetraethylammonium chloride blocks, but results were poor in 12 in whom there was no element of vasospasm. As a diagnostic aid in selecting patients with essential hypertension and patients with peripheral vascular disease for sympathectomy tetraethylammonium chloride proved to be of particular value. In 12 patients with causalgic conditions and allied sympathetic disorders, the intravenous ganglion block helped to relieve pain and aided in diagnosing sympathetic involvement. Tetraethylammonium chloride is a powerful pharmacologic agent with the ability to lower the blood pressure acutely and to produce temporary weakness, which may last from one-half to two hours. A state of syncope following the intravenous injection of the drug was noticed only in 1 instance and was readily controlled with epinephrine. It is not advisable to use tetraethylammonium chloride in patients in any condition of shock, in which the blood pressure has already been depressed. It is not feasible as a routine treatment for hypertension, although it will relieve the symptoms of the complications of hypertension in many instances.

Northwest Medicine, Seattle

48:295-368 (May) 1949

- Diagnostic and Therapeutic Considerations in Management of Acute Abdomen. W. H. Wangensteen.—p. 315.
- Review of Certain Aspects of Pathologic Physiology of Cirrhosis of Liver. W. A. Ricker.—p. 319.
- Treatment of Cerebral Palsy: Clinical Study in Use of d-Tubocurarine in Peanut Oil and Myricin. C. L. Holm, E. V. Olsen and R. S. Dow.—p. 320.
- Congenital Diaphragmatic Hernia on Right Side. J. M. Boyles.—p. 324.
- Anatomy of Hand in Relation to Tendon Repairs. H. M. Nichols.—p. 327.
- Blood Phenol Levels in Uremia. M. P. Starr.—p. 330.
- Gonococcic Peritonitis of Upper Abdomen: Subcostal Syndrome of Stajano; Fitz-Hugh-Curtis Syndrome. F. C. Massey and K. K. Sherwood.—p. 332.
- Hemorrhage from Angioma Complicating Pregnancy. G. G. Davis.—p. 334.

Pediatrics, Springfield, Ill.

3:575-734 (May) 1949

- *Observations on 117 Patients Operated on for Congenital Pulmonary Stenosis. J. F. Dammann Jr., S. Gibson and W. J. Potts.—p. 575.
- Social Adjustment of Six Patients with Hemophilia Prior to and During Prophylactic Treatment. E. Cohen and R. L. Herrmann.—p. 588.
- Anomalous Channel Between Aorta and Right Ventricle: Report of Case. R. C. Brown and J. D. Burnett.—p. 597.
- Apical Diastolic Heart Sounds in Active Rheumatic Fever. S. Friedman and T. N. Harris.—p. 603.
- Commentary on Natural Childbirth. F. W. Goodrich Jr. and H. Thomas.—p. 613.
- Value of Rooming-In Experience in Pediatric Training. R. W. Olmsted, R. I. Svibergson and J. A. Kleeman.—p. 617.
- Change in Thiocyanate and Sodium^{24} Spaces During Growth. F. X. Fellers, H. L. Barnett, K. Hare and H. McNamara.—p. 622.
- *Changed Status of Diphtheria Immunity. P. Cohen, H. Schneck, E. Dubow and S. Q. Cohlan.—p. 630.
- Penicillin Treatment of Diphtheria Carriers. S. Karelitz and V. A. Spinelli.—p. 639.
- Intestinal Absorption of Vitamin A from Oily and Aqueous Media in Patients with Celiac Syndrome. W. H. Danielson, E. L. Binkley and H. D. Palmer.—p. 645.
- Homologous Serum Hepatitis in Infants and Children. R. E. Moloshok, S. Karelitz and Lotte Strauss.—p. 651.

Congenital Pulmonary Stenosis.—Dammann and co-workers operated on 117 patients for congenital stenosis of the pulmonary artery. In 108 patients the congenital stenosis of the pulmonary artery occurred in conjunction with tetralogy of Fallot, in 6 patients with tricuspid atresia and in 1 patient with pulmonary valve stenosis and a patent foramen ovale. Diagnosis of typical tetralogy of Fallot is not difficult. Tricuspid atresia differs from tetralogy of Fallot in two respects: first, roentgenographic and fluoroscopic studies reveal the relatively large left ventricle and small right ventricle; second, tricuspid atresia is practically the only congenital heart lesion in patients with cyanosis in which left axis deviation is observed in the electrocardiogram. Potts-Smith technic whereby a side to side anastomosis between the aorta and a pulmonary artery is performed, was used in 104 patients, the Blalock technic in 1, and exploration alone in 12. Among the 105 patients in whom an aortic-pulmonary anastomosis was performed there were 10 fatalities, a mortality rate of 9.5 per cent. Of the 12 patients with exploration operations, 6 died. The over-all mortality in the entire series was 13.8 per cent. Cerebral anoxia was the cause of death in the majority of cases. At the time of writing the long term value of the operation cannot be assessed. The results to date have been generally satisfactory; they have been slightly less satisfactory in older patients with a right aortic arch than in patients with a left aortic arch. Excessive cardiac enlargement has occurred in a few instances. It seems that the safest time for operative correction is between the ages of 3 and 8 years, and that infancy is the most dangerous period.

Diphtheria Immunity.—Cohen and co-workers performed Schick tests on 683 pregnant and nonpregnant women from various sections of the city of New York and also on the babies delivered of the pregnant women. Two hundred and seventy-four women (40.1 per cent) were Schick positive and 409 (59.9 per cent) negative. Antitoxin titrations corroborated the observations that the great majority of the Schick-positive women have less than 0.01 of a unit of antitoxin per cubic centimeter of serum, indicating susceptibility to diphtheria. Analysis of the whole series revealed that previous childhood immunization did not seem to exert an effect on the adult status of immunity to diphtheria. Childhood attacks of diphtheria also apparently had little or no effect on the Schick test of the adult, either because antitoxin had been administered or the active immunity had been lost with the passage of years. Anergy of the young infants' skin to diphtheria toxin, noted by previous observers, was confirmed. Nearly half of the younger infants of 57 Schick-positive mothers were Schick-negative; the others, with 2 exceptions, had less intense reactions to the test than did their mothers. The Schick test of the mother is a much more reliable test of the infant's immunity to diphtheria than the baby's own reaction. While the increase of diphtheria morbidity has not been alarming in the United States, it is not wise or expedient to delay the correction of this lost or waning immunity among the present young adult generation until diphtheria assumes threatening epidemic proportions. The restoration of humoral immunity to diphtheria and the excitation of cellular immunity by periodic stimulating inoculations will cause a decline in diphtheria susceptibility and morbidity. These ends can be attained by continuing recall doses at periodic intervals during childhood and early adult life, thus converting the potential protection of cellular immunity into the active protection of the humoral immunity. In the case of women it may be wise to increase such immunity to an adequate level during pregnancy to safeguard the newborn with similarly adequate immunity.

Philippine Medical Association Journal, Manila

25:109-158 (March) 1949

- Leukemoid Reaction in Tuberculosis with Report on 2 Cases. W. Vitug, J. R. Cruz, A. Guytingco and P. N. T. Mendoza.—p. 109.
- Surgery of Biliary Tract. J. Estrada and P. T. Nery.—p. 115.
- Transitory Pulmonary Infiltration (Loeffler's Syndrome). F. T. Roque.—p. 119.
- So-Called Allergic Intestinal Bleeding Syndrome in Infants (Case Report). A. R. Ines-Tan.—p. 125.
- Danger to Mother of Full Term Hydrocephalic Fetus. H. Acosta-Sison.—p. 131.
- *Malaria Simulating Acute Appendicitis. A. B. Morales, A. L. Ortiz and L. S. Garcia.—p. 135.

Malaria Simulating Acute Appendicitis.—Morales and co-workers say that although Manson-Bahr states that subtertian malaria may simulate surgical conditions, he does not specify acute appendicitis as one of them. They have encountered cases of malaria manifesting symptoms of acute appendicitis. Before this study was made, they operated on 2 patients with a preoperative diagnosis of acute appendicitis but with normal appendixes. Response to quinine therapy confirmed the presence of malaria. The authors report 6 cases in which appendicitis had been suspected at first, but which were recognized as malaria prior to operative intervention. The occurrence of moderate or high fever, a positive history of previous attack of malaria, a palpable spleen and a normal white blood cell count or leukopenia are strongly suggestive of malaria, even when the abdominal signs and symptoms indicate a pathologic condition in the terminal ileum, cecum and appendix. The diagnosis of intestinal malaria in all 6 cases was confirmed by positive blood smear and effective antimalarial therapy.

Virginia Medical Monthly, Richmond

76:213-270 (May) 1949

- Medical Care. H. B. Mulholland.—p. 214.
- American Medical Association's Responsibility in Problem of Medical Care. W. B. Martin.—p. 214.
- Rural Health. F. S. Crockett.—p. 217.
- Ten Commandments of Prepayment. T. A. Hendricks.—p. 219.
- Recent Trend in Treatment of Obesity. H. E. Ferguson.—p. 222.
- Experiences with Low Sodium Diets. E. G. Scott.—p. 225.
- Calcinosis: Report of Case. W. L. Wingfield and E. C. Toone Jr.—p. 230.
- Rhabdomyosarcoma: Its Dissemination and Response to Radiation. J. P. Moore.—p. 234.
- Radium Therapy for Lymphoid Hyperplasia of Nasopharynx. G. N. Thrift.—p. 239.
- Transurethral Resection and Neurogenic Bladder. M. Malament and R. C. Bunts.—p. 243.
- Diagnosis in Dermatology. W. H. Kaufman.—p. 247.
- Cesarean Section: Report of 600 Cases. L. S. Pearce.—p. 249.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Biochemical Journal, London

44:257-384 (No. 3) 1949. **Partial Index**

Influence of Pituitary on Phosphorus Metabolism of Brain. M. Reiss. F. E. Badrick and J. H. Halkerston.—p. 257.
Studies on Cholinesterase: Selective Inhibition of True Cholinesterase in Vivo. R. D. Hawkins and B. Mendel.—p. 260.
Changes in Extracellular and Intracellular Fluid Phases of Muscle During Starvation and Dehydration in Adult Rats. S. E. Dicker. —p. 274.
Frequency Distribution of Zinc Concentrations in Dental Tissues of Normal Population. D. B. Cruickshank.—p. 299.
Studies on Absorption of Proteins: Amino-Acid Pattern in Portal Blood. C. E. Dent and J. A. Schilling.—p. 318.
Metabolism of Sulfonamides. R. L. Hartles and R. T. Williams. —p. 335.
Fluorimetric Estimation of Riboflavin in Foodstuffs and other Biologic Material. E. Kodicek and Y. L. Wang.—p. 340.
Excretion of Synthetic Estrogens as Ethereal Sulfates and Monoglucuronides in Rabbit and in Man. S. A. Simpson and A. E. Wilder Smith.—p. 366.
Formation of Hydrogen Carriers by Hematin-Catalyzed Peroxidations: Reactions of Adrenaline and Adrenochrome. J. E. Falk.—p. 369.

British Journal of Cancer, London

1:1-160 (March) 1949. **Partial Index**

Mortality from Cancer of Skin and Lip in Certain Occupations. M. Atkin, J. Fenning, J. A. Heady and others.—p. 1.
*Treatment of Retinal Glioma. E. M. Japha.—p. 16.
Study of Connective-Tissue Reaction to Radiation. Sieve or Chess Method. B. Jolles.—p. 27.
Urinary Cholesterol in Cancer: Urinary Cholesterol Excretion in Cancer Patients and Control Subjects. M. M. Burchell, J. H. O. Earle and N. F. Maclagan.—p. 42.
Qualitative Study of Urinary 17-Ketosteroids in Normal Males and in Men with Prostatic Disease. A. M. Robinson and F. Goulden.—p. 62.
Cultivation of Tumors in Fertile Egg, with Special Reference to Associated Ectodermal Lesions of Chorioallantoic Membrane. J. G. Campbell. —p. 72.
Intranasal Administration of Mammary Tumor Milk Factor. A. M. Begg.—p. 88.
Attempt to Demonstrate Neutralizing Antibodies to Mammary Tumor "Milk Agent" in Mice. P. A. Gorer and L. W. Law.—p. 90.
*Inhibition of Carcinogenic Properties of Urethane by Pentose Nucleotides. P. N. Cowen.—p. 94.
Induction of Mutations by Carcinogen. L. C. Strong.—p. 97.
*Induction of Tumors with Nitrogen Mustards. E. Boyland and E. S. Horning.—p. 118.
Carcinogenic Activity of Lipoid Substances. I. Hieger.—p. 123.
Investigations on Serum Proteins in Rats During Development of Hepatic Tumors Due to Feeding p-Dimethylaminoazobenzene. C. Hoch-Ligeti, H. Hoch and K. Goodall.—p. 140.
Experiments of Identification of 3:4-Benzpyrene in Domestic Soot by Means of Fluorescence Spectrum. F. Goulden and M. M. Tipler. —p. 157.

Treatment of Retinal Glioma.—Japha reviews the literature on the treatment of retinal glioma and describes observations made on 19 patients seen at the Middlesex Hospital between 1929 and 1946. Surgical excision is the mainstay of therapeutic procedure in this condition. In all bilateral cases in this series the patients have had at least one eye excised—1 patient was sent for radiotherapy of the second eye, but the growth was already too far advanced and this eye, too, was removed. The child is alive without sign of recurrence of glioma five years later. In the three primary unilateral cases with treatment by surgical measures alone the patients are still alive and well 3¾, 5¾ and 6 years later. The operation consisted of an excision of the globe with as much of the optic nerve as possible. A table records the results of irradiation (radium molds or high voltage roentgen ray) in 15 cases, 11 primary and 4 recurrent. In the 11 primary cases 1 patient died and in the 4 recurrent cases 3 patients died. Thus 11 of 15 survived, but in some of the 11 less than four years have elapsed since treatment. Cataract has developed in some of the patients treated by irradiation. A minimum tumor dose of 3,300 r is considered essential, and overdosage (probably more than 4,500 r) is warned against.

Inhibition of Carcinogenic Properties of Urethane by Pentose Nucleotides.—Cowen shows that when pentose nucleotides are injected into mice receiving treatment with urethane (ethyl carbamate) the number of pulmonary tumors is only about half that otherwise resulting from urethane therapy. This experiment indicates that there may be some connection between the carcinogenicity of urethane and its leukopenic properties, because the carcinogenic effect is inhibited by a substance which causes leukocytosis.

Induction of Tumors with Nitrogen Mustards.—Boyland and Horning point out that recent experience has shown that many of the growth-inhibiting agents used in the palliative treatment of cancer are carcinogenic. They cause specific damage to cell nuclei and chromosomes and are able to induce mutations. After reviewing the literature on the carcinogenic effects of roentgen rays and of certain chemical carcinogens, the authors say that by analogy with previous observations the nitrogen mustards might be expected to have carcinogenic action. Two groups of 20 mice each were given weekly subcutaneous injections of nitrogen mustards. Of 14 mice which survived more than two hundred and fifty days, 10 had tumors, including pulmonary tumors, lymphosarcomas, a uterine fibromyoma and a spindle-celled sarcoma at the site of injection.

British Journal of Experimental Pathology, London

30:1-84 (Feb.) 1949. **Partial Index**

Rift Valley Fever; Neurotropic Adaptation of Virus and Experimental Use of This Modified Virus as a Vaccine. K. C. Smithburn.—p. 1.
*Hyperplasia of Parathyroids Associated with Osteitis Fibrosa in Rats Treated with Thiouracil and Related Compounds. J. Malcolm, W. E. Griesbach, F. Bielschowsky and W. H. Hall.—p. 17.
Thyrotropic Hormone in Thyrotoxicosis, Malignant Exophthalmos and Myxedema. H. D. Purves and W. E. Griesbach.—p. 23.
Rift Valley Fever; Transmission of the Virus by Mosquitoes. K. C. Smithburn, A. J. Haddow and W. H. R. Lumsden.—p. 35.
Factors Involved in Influenza Hemagglutination Reactions. W. Smith and M. A. Westwood.—p. 48.
Effect of Heat on Diphtheria Toxoid-Antitoxin Floccules. M. Barr. —p. 61.

Hyperplasia of Parathyroids in Rats Treated with Thiouracil.—Malcolm and co-workers state that, whereas many reports have discussed the effects of thiourea and related substances on the thyroid and the pituitary, no report has mentioned changes in the parathyroids. Recently long term experiments have provided them with material permitting an appreciation of the changes induced by goitrogenic agents in the parathyroids. This communication describes the changes and the simultaneous occurrence of osteitis fibrosa in rats treated with thiourea, thiouracil or methylthiouracil for long periods. After fourteen months or more of feeding of thiourea or related compounds (thiouracil and methylthiouracil), generalized osteitis fibrosa was found in 9 of 33 rats in association with enlargement of the parathyroids. The thyroid hyperplasia produced by thiourea and related compounds is always accompanied by enlargement of the parathyroids. This could be observed as early as three weeks after the beginning of treatment. It seemed obvious that this effect was due to an increased blood supply to both the thyroid and the parathyroid. By simultaneous administration of the goitrogen and thyroxine, the hyperplasia of both organs could be suppressed in short term (eight weeks) experiments. However, when goitrogen and thyroxine were given together for twelve months or more, the thyroids had retained their normal size and activity, but the parathyroids increased in size proportionately to the time of treatment, reaching in some cases the size of the thyroid. Hyperplasia of the parathyroid preceded by many months the appearance of bone lesions. The syndrome observed corresponds closely to the picture of osteitis fibrosa generalisata, or Recklinghausen's disease in human beings. The similarity is underlined by the importance of a *time factor* in both conditions.

British Journal of Ophthalmology, London

33:261-328 (May)1949. **Partial Index**

Pathogenesis of Concurrent Eye and Joint Diseases. E. Godtfredsen. —p. 261.
Ox Vitreous Humor. 2.—Hyaluronic Acid Relationships. A. Pirie. —p. 271.
Recession of Inferior Oblique. I. Lloyd.—p. 291.
Formation of Intra-Ocular Fluids. Studies of Urea Component of Aqueous Humor. E. J. Ross.—p. 310.

British Medical Journal, London

1:791-832 (May 7) 1949

Pathogenesis of Essential Hypertension. F. H. Smirk.—p. 791.
Role of Infection in Granulopenia. K. Robertson.—p. 799.
Instruction of Medical Student in Pediatrics: Insight Into Family Practice. W. S. Craig, F. C. Naish and M. F. G. Buchanan.—p. 801.
Intermenstrual Pain ("Mittelschmerz") and Time of Ovulation. P. L. Krohn.—p. 803.
Syndrome of Diaphragmatic Hernia and Anemia. A. D. Codounis. —p. 805.
Amebic Vaginitis. N. C. Sen.—p. 808.

Journal of Endocrinology, London

6:1-120 (April) 1949. **Partial Index**

Goitrogenic Effect of Aminothiazole and Reactions of Thymus and Lymphoid Tissue. C. Grégoire.—p. 14.
Metabolic Response to Thyroid Depressant Drugs in Animals Maintained in Cold Environment. R. A. Macbeth and R. L. Noble.—p. 28.
Urinary Pregnanediol Estimation as Test for Pregnancy. J. Henderson, N. F. MacLagan, V. R. Wheatley and J. H. Wilkinson.—p. 41.
Effect of Chronic Inanition on Gonadotropic Content of Pituitary Gland. L. M. Rinaldini.—p. 54.
"Diabetogenic" Activity of Growth-Promoting Pituitary Extracts in Rats. J. H. Gaarenstroom, J. Hublé and S. E. de Jongh.—p. 71.
Fructose and Citric Acid Assay in Secretions of Accessory Glands of Reproduction as Indicator Tests of Male Sex Hormone Activity. T. Mann, D. V. Davies and G. F. Humphrey.—p. 75.
Influence of Methyl-Testosterone upon "Endocrine Kidney." H. Selye and H. Stone.—p. 86.
Urinary Excretion of Neutral 17-Ketosteroids in Childhood. M. E. Wood and C. H. Gray.—p. 111.

Lancet, London

1:763-806 (May 7) 1949

Epidemic of Acute Nephritis. J. Fleming.—p. 763.
*Streptomycin and Promizole in Miliary Tuberculosis and Tuberculous Meningitis in Children. E. M. Lincoln and T. W. Kirmse.—p. 767.
Decamethonium Iodide (Bistrimethylammonium Decane Diiodide) in Anesthesia. G. Organe.—p. 773.
Effects of Decamethonium Iodide (C 10) on Respiration and on Induced Convulsions in Man. D. L. Davies and A. Lewis.—p. 775.
Handkerchiefs in Transfer of Respiratory Infection. K. R. Dumbell and J. E. Lovelock.—p. 777.
Is Insulin Antigenic? H. Hult and E. Jorpes.—p. 780.

1:807-848 (May 14) 1949

Origin of Placental Trophoblast and Function of Placental Gonadotrophin. I. Gordon.—p. 807.
Spontaneous Hypoglycemia. R. Hastings-James.—p. 814.
Decamethonium Iodide as Muscle Relaxant in Anesthesia. A. J. H. Hewer, B. G. B. Lucas, F. Prescott and E. S. Rowbotham.—p. 817.
Comparison of Decamethonium Iodide with d-Tubocurarine in Controlling Electrically Induced Convulsions. J. A. Hobson and F. Prescott. —p. 819.
Carcinoma of Parathyroid Gland with Hyperparathyroidism. O. L. V. de Wesselow and H. E. de Wardener.—p. 820.
Abdominal Injury from Lightning. R. J. Alcock and H. C. Fletcher-Jones.—p. 823.
Treatment of Seasickness Aboard Ocean-Going Ships. M. B. McEvedy. —p. 825.

Streptomycin and Promizole in Miliary Tuberculosis and Tuberculous Meningitis.—According to Lincoln and Kirmse the sulfones and streptomycin have been found effective to some extent in controlling tuberculosis. Meningitis and acute generalized hematogenous dissemination are two forms of tuberculosis suitable for investigation of the therapeutic effect of these substances, because both conditions have a high fatality rate. Promizole® (4,2'-diaminophenyl-5'-thiazolyl sulfone) was used by the authors in 7 patients with miliary tuberculosis. Clinical meningitis did not develop in any of them. Five patients have survived two to four years and are free from evidence of miliary tuberculosis. Ten patients with miliary tuberculosis were treated simultaneously with streptomycin and promizole.® One patient died after six days' treatment, and another died of a relapse from meningitis eleven months after the initial diagnosis of miliary tuberculosis. No relapse of miliary tuberculosis has occurred in the survivors of either group. Eighteen patients with tuberculous meningitis were treated with intramuscular and intrathecal streptomycin and with promizole by mouth. Thirteen patients were alive three to twenty-one months later. There were no serious neurologic sequelae. In 3 cases relapse occurred twenty-five to forty-three days after completion of therapy. Tubercle bacilli fully sensitive to streptomycin were cultured from the cerebrospinal fluid in each of the 3 cases during the first week of relapse. Relapses were diagnosed on the basis of cerebrospinal fluid findings in the absence of neurologic signs and symptoms. Thus there is evidence that the addition of promizole® to streptomycin is of value in the treatment of miliary tuberculosis and tuberculous meningitis.

Medical Journal of Australia, Sydney

1:477-512 (April 9) 1949. **Partial Index**

*Prevention of Gastro-Enteritis in Infants. M. J. Mackerras and I. M. Mackerras.—p. 477.
Treatment of Coronary Disease and Its Complications. J. G. Sleeman. —p. 483.
Diagnosis of Arterial Disease of the Limbs. J. H. Tyrer.—p. 486.
Diagnosis of Congenital Heart Disease. C. Fortune.—p. 490.
Surgical Treatment of Congenital Heart Disease. C. J. Officer Brown. —p. 493.

Gastroenteritis in Infants.—The Mackerras believe that the most important procedures by which gastroenteritis may be prevented from spreading in institutions which care for young babies are: (1) awareness of the seriousness of the problem and of the dangers presented by unrecognized infections in wards and nurseries; (2) strict separation of the duties and scrubbing-up facilities of "clean" and "change-up" nurses and institution of "infectious disease" technics for nurses, doctors and students who enter and leave gastroenteritis wards; (3) careful attention to ward hygiene, and especially to the methods of changing and disposing of soiled napkins and other contaminated material, and (4) preparation of food for infants in a separate, properly designed and equipped "formula room" and sterilization of the food in completely covered units before being sent to the wards. The authors are convinced that the procedures described are practicable and that the development of efficient control would result in a further significant reduction in the numbers of preventable deaths. The mortality rate of infants in the Australian state of Queensland was reduced from 36.2 per thousand in 1936 to 29.3 per thousand in 1946, but nearly 1 in every 30 babies still dies in its first year of life.

1:541-568 (April 23) 1949

*Nutritional Disease of Liver. I. J. Wood, H. W. Garlick, R. Motteram and others.—p. 541.
Observations on Pathology of Infectious Hepatitis and Allied Conditions. J. W. Perry.—p. 547.
Physiologic Considerations in Relation to Hepatic Disease. C. S. Hicks. —p. 549.
Account of, and Conclusions Drawn from, 50 Cases of Anesthesia with "D-Tubo-Curarine Chloride" Adjuvant. A. H. Smith.—p. 550.

1:569-604 (April 30) 1949. **Partial Index**

Hyperkinetic or Over-Active Babies. H. B. Graham.—p. 571.
Penicillin and Streptomycin in Treatment of Hemophilus Influenza Meningitis. J. Tom and S. Williams.—p. 573.
Making of Abdominal Incisions. A. E. Lee.—p. 575.
Treatment of Disseminated Sclerosis by Prolonged Lowering of Blood Prothrombin Level. L. B. Cox, P. Fantl and M. Fitzpatrick.—p. 577.

Nutritional Disease of Liver.—Wood and co-workers studied 109 cases of hepatic disease at the Royal Melbourne Hospital. Eighteen cases in which nutritional factors were responsible were studied by clinical observation, biochemical tests and aspiration biopsy of the liver. Seven cases are reported in detail. The etiologic factor was established by a dietetic history. Malnutrition was most frequently associated with alcoholism. The clinical observations in nutritional disease of the liver were lassitude, weakness and impairment of mentality. The appeitite was poor with nausea. Jaundice was slight or absent. Hematemesis was occasionally seen. The liver was usually enlarged and tender. Results of liver function tests were within normal limits in early cases. Only in severe relapses was there a considerable rise in serum bilirubin content. When portal cirrhosis was established there was usually a positive result in the cephalin flocculation test, impaired hippuric acid excretion, an increase in urobilinogen in the urine, a slightly raised or normal alkaline phosphatase level and a reversal of the albumin/globulin ratio. Aspiration biopsy of the liver provided a means for observing the stages in the progression of the fatty liver toward portal cirrhosis. Biopsy was also of assistance in establishing diagnosis and prognosis. Treatment consisted in removal of toxic substances, correction of the patient's dietetic habits and the giving of a liberal diet rich in protein and vitamins. It may be wise to add vitamin supplements and lipotropic substances such as choline. Intercurrent infections must be controlled and the patient's occupation and habits adjusted. If this treatment can be maintained, the early case of nutritional disease of the liver may be cured and the downward trend of a patient with severe, advanced portal cirrhosis may at least be retarded. The authors believe that nutritional disease of the liver often remains undiagnosed, as the physician often fails in the task of discovering the patient's dietetic indiscretions.

Acta Medica Scandinavica, Stockholm

133:149-220 (April 23) 1949. **Partial Index**

*Observations on Methylthiouracil Treatment of Thyrotoxicosis. H. Lou and F. Wulff.—p. 149.
Comparison Between Two Swedish Influenza Virus Strains and Virus A Strain PR8. G. Löfström.—p. 162.
*Value of Implantation of Hypophyseal Tissue in Treatment of Hypophyseal Insufficiency. A. Westman.—p. 171.
Blood Iodine and Thyroid Function: Study of 254 Cases. P. Soisalo.—p. 186.
Fractionation of Fibrinogen. M. Horányi.—p. 210.

Methylthiouracil Treatment of Thyrotoxicosis.—Lou and Wulff report on 98 patients whose thyrotoxicosis was treated at their hospital between February 1944 and Dec. 31, 1946. The last follow-up examination of the patients treated with methylthiouracil took place during the second half of 1947 and January 1948, so that six months to nearly four years had elapsed since the onset of treatment. Twenty-two of the patients never received methylthiouracil, because they either wanted to be operated on or were not suitable for treatment with the drug. Another group of 15 patients were at first treated with methylthiouracil but were later subjected to either surgical or roentgenologic treatment. Of 61 patients treated only with methylthiouracil, 1 patient has been lost sight of, 1 died from coronary thrombosis and in 2 thyrotoxicosis persisted in spite of the treatment, but the other 57 are free from symptoms and able to work. Of these, 13 patients have been of good health and without methylthiouracil treatment for two years; 24 patients have been well and without this treatment for one year; 11 patients are still receiving methylthiouracil. On the basis of their experience the authors regard methylthiouracil therapy as satisfactory in most cases of thyrotoxicosis.

Implantation of Hypophyseal Tissue for Insufficiency.—Westman discusses the value of implantation of pituitary tissue in disorders regarded as attributable to hypophyseal insufficiency. The pituitaries were obtained from the skulls of freshly killed calves, which should not be too young, because pituitaries of very young animals contain little gonadotropic hormone. The pituitaries were minced to a semisolid mass and implanted not more than two hours after the animal had been killed. In female patients implantations were made usually into the labia majora after a subcutaneous pocket had been prepared by blunt dissection. In men an area in the pectoral or gluteal regions was selected for implantation. In the women with menstrual disturbances selected for this treatment, estrone and thyroid and in some also gonadotropic hormone therapy had proved unsuccessful. The implantation was effective in 3 of 36 cases of primary amenorrhea; 32 of 111 patients with secondary amenorrhea were benefited and 22 of 80 patients with oligomenorrhea were improved, 7 becoming pregnant. The implantation was effective in the 2 patients in whom adiposogenital dystrophy was associated with cryptorchism. Good results were obtained also in 2 of 10 patients with total alopecia and in 1 of 5 with alopecia areata. In 2 patients with diabetes insipidus a temporary beneficial effect was obtained. In several patients in whom ovarian disorders were accompanied with adiposity or delay in growth these conditions likewise improved after implantation. Implantation of pituitary may be more promising in cases with pluriglandular insufficiencies than is treatment with single endocrine substances.

Día Médico, Buenos Aires

21:464-504 (March 28) 1949. **Partial Index**

*Cranial Trauma and "Immediate" Papillary Edema. R. F. Matera, H. Casté and A. Martino.—p. 477.
Vertebral Rheumatism. C. E. Ottolenghi and F. Oleaga Alarcón.—p 484.

Cranial Trauma and Papillary Edema.—Matera and collaborators reviewed the records of 350 cases of acute craniocerebral trauma which were compiled during ten years in a hospital department of neurology and neurosurgery. "Immediate" papilledema occurred in 16 cases (4.5 per cent). It was associated in all cases with a blind spot in the visual field and with engorgement of veins. In all of the reported cases papilledema was due to post-traumatic intracranial hypertension without hematoma. Immediate papilledema is bilateral, as a rule, and appears between forty-eight hours and ten days after the occurrence of cranial trauma. When it is unilateral it does not cause amaurosis. Unilateral amaurotic "immediate" papilledema appearing in about twenty-four hours after cranial trauma indicates hemorrhage of the subarachnoid sheath of the optic nerve. "Immediate" papilledema with intracranial hypertension is preceded by an increased tension of the central retinal artery. There is a pathogenetic relationship between the post-traumatic pathologic and physiochemical changes in the cerebral tissue and the occurrence of papilledema. The treatment consists of rest, rehydration and administration of hypertonic sodium chloride solution, provided the pulse, temperature, respiration, arterial pressure and mental alertness are within normal limits. Decompression operation is indicated when signs of so-called syndrome of compensation do not improve in the course of treatment for intracranial hypertension. Papilledema disappeared within the first month. Two patients had sequels: hypoacusia and diminished visual acuity. Cerebral dysrhythmia was demonstrated in the electroencephalographic tracings of 4 patients, one or two months after a clinical cure had been obtained. These observations suggest the advisability of periodic clinical and electroencephalographic observations to evaluate the progress of the lesion.

Lyon Chirurgical

44:257-384 (May-June) 1949. **Partial Index**

*Infiltration of Stellate Ganglion, Sympathectomy and Arteriectomy in Embolism and Thrombosis of Cerebral Arteries and After Injuries of the Carotid Artery. R. Leriche.—p. 257.
Functional Arrest of Cerebral Origin; Treatment by Infiltrations of Upper Cervical Sympathetic Ganglion. P. Stricker.—p. 264.
Surgical Intervention on Sympathetic Nerve in Treatment of Cerebral Embolism and Thrombosis. A. de Sousa Pereira.—p. 271.
*Experimental Research on Pathogenesis of Acute Pancreatitis; Provocation by Stimulation of Left Splanchnic Nerve. P. Mallet-Guy, J. Feroldi and E. Reboul.—p. 281.

Interventions on Cerebral Vasomotoricity.—Leriche cites his observations in 1920 when he attempted to produce cerebral ischemia in patients with jacksonian epilepsy by pericarotid sympathectomy, prior to the excision of meningocortical scars. It was demonstrated then that cerebral vasoconstriction could be obtained by intervention at a distance. In 1936 in 1 case of apoplectic attack following hysterectomy in an obese woman aged 58, and later in 8 instances of postoperative hemiplegic coma, the author observed definite improvement from infiltration of the stellate ganglion. Ganglionectomy was performed in 1 case of Babinski-Nageotte syndrome in a patient with angina pectoris. Ataxia and cerebellar symptoms disappeared and the attacks of angina pectoris were controlled. A war veteran, who nineteen months previously sustained a gunshot wound in the neck involving the common carotid artery, presented a partial injury of the left brachial plexus, dysarthria and a right hemiplegia due to cerebral ischemia. The speech was restored by the resection of the occluded segment of the common carotid artery. The circulatory dynamics of the external and internal carotid arteries were not changed by the arteriectomy. The reversibility of the symptoms of central origin can be explained only on the basis of modification of the cerebral vasomotoricity. In a second case, a war veteran sustained a gunshot injury of the carotid artery which resulted in considerable dysarthria, loss of memory and hemiplegia. Speech and rhythm of thought were improved considerably by repeated infiltrations of the stellate ganglion. Pericarotid sympathectomy restored these functions to near normal. These results can be explained only by the relief of cerebral vasoconstriction. Surgical intervention on the sympathetic nerves affords definite therapeutic possibilities in cerebral vascular disturbances.

Pathogenesis of Acute Pancreatitis.—Experiments by Mallet-Guy and co-workers on 126 guinea pigs and 16 dogs demonstrated that acute pancreatitis may be produced by stimulation of the left splanchnic nerve or of its peripheral end by faradic current for thirty seconds in guinea pigs, and from stimulation of the left splanchnic nerve by faradic current for fifteen minutes or longer by ligature or by injection of a chemical agent in dogs. The pancreatitis was severer when the stimulation of the left splanchnic nerve was performed during the period of digestion, that is, in the state of secretory activity of the pancreas, or in the course of anaphylactic shock. Acute pancreatitis could not be produced by anaphylactic shock alone, nor was it observed after electric stimulation of the right splanchnic nerve, of the central end of the splanchnic nerves and of the left vagus. Biopsy of pancreatic tissue suggested that the acute pancreatitis produced by stimulation of the left splanchnic nerve was due to vasomotor disturbances (ischemia followed by stasis) in the pancreas. These experimental facts confirm the concept that local vasomotor disturbances of the pancreas may produce acute pancreatitis in man. A physiopathologic basis is thus afforded for the indication as to the treatment of human pancreatitis by left splanchnicectomy.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

93:1029-1104 (April 2) 1949. Partial Index

Early Recognition of Mammary Carcinoma. W. F. Suermondt.—p. 1030.
*Glutamic Acid in Treatment of Mentally Retarded Children. W. Ernsting.—p. 1044.
*Artificial Insemination in Human Subjects. M. H. Tromp.—p. 1054.
Bronchography in Pulmonary Tuberculosis. P. Zuidema.—p. 1063.

Glutamic Acid in Mentally Retarded Children.—Ernsting administered glutamic acid to 8 mentally retarded children and treated 4 controls with an indifferent substance. No mental progress could be observed in those treated with glutamic acid; they did not advance more than did the control group. Some seemed to be less dull and inattentive, and emotional instability was lessened, but there was no corresponding improvement in the intelligence quotient. The same changes were observed in the controls. The author stresses that in evaluating the results of such tests, the mental and physical condition of the child should be taken into account, also the learning of the test and the influence exerted by close attention to the child.

Artificial Insemination in Human Subjects. — Tromp reviews the French, British and American literature on artificial insemination and discusses the legal aspects of this problem. The Netherlands have no law regarding artificial insemination in human beings. A physician who resorts to it is not punishable by law. Artificial insemination with a donor's sperm is inadmissible for eugenic and other reasons. In special cases in which the physical and mental health of the wife is impaired by being childless, and in which fecundation by the husband is impossible, the physician may consider artificial insemination, provided both husband and wife desire it and the wife is not likely to suffer harm from pregnancy and confinement.

Presse Médicale, Paris

57:401-416 (May 7) 1949

*Roux and Yersin's Toxin in Diphtheritic Paralyses. G. Ramon.—p. 401.
*Late Results of Treatment of Infiltrating Cancer of the Bladder by Partial Cystectomy. R. Gouverneur and P. Aboulker.—p. 402.
Symptomatology of "Circumscribed" Bronchitis. J. M. Lemoine and J. de Leobardy.—p. 404.

Roux and Yersin's Toxin and Diphtheritic Paralysis.—Roux and Yersin demonstrated in 1888 that diphtheria is an intoxication caused by a poisonous substance originating in the diphtheria bacillus. By injecting variable doses of this soluble toxin into animals, these two pupils of Pasteur reproduced various forms of diphtheritic intoxication ranging from those resulting in death within a few hours to those manifested by fatal paralysis at a later period, or in which recovery may occur. Ramon rejects Ehrlich's concept that toxon, one of several hypothetic diphtheritic poisons, may be responsible for diphtheritic paralysis and delayed death. Experiments performed by the author on guinea pigs showed that paralysis may be produced with a minimum amount of a fresh diphtheritic filtrate which possesses a maximum toxicity. Injection into the leg of a guinea pig of a small amount of diphtheritic toxin whose toxicity had been reduced but not destroyed by the addition of antitoxin or formaldehyde produced a mild edema in some of the animals at the point of the injection. Within fifteen to twenty days some of the animals showed signs of paralysis in the leg into which the injection was made. Death from generalized progressive flaccid paralysis occurred within thirty to forty days after the injection. The course of this nervous disturbance could be accelerated or retarded by increasing or reducing the dose of the toxin. Clinical observations corroborated the results of the animal experiments.

Infiltrating Cancer of the Bladder.—Gouverneur and Aboulker report late results of partial cystectomy performed on 46 patients with infiltrating carcinoma of the bladder. In 32 of the patients the tumor was localized in the lower part of the bladder and in 14 it was in the upper part. Partial cystectomy had been recommended particularly for cases of the latter type. Eleven of the 14 patients had recurrences, which were fatal in 10. Of all 46 patients, 3 recovered without recurrence for five, seven and nine years, respectively. Five patients survived less than five years. Thirty-five patients had a recurrence, which was fatal in 32. Three patients survived a second intervention for two, five and six years, respectively. Two patients were lost sight of and 1 patient died from a perforating duodenal ulcer. Partial cystectomy should not be considered as a curative treatment for infiltrating cancer of the bladder except for rare cases in which the tumor is limited in surface and depth.

Ugeskrift for Laeger, Copenhagen

111:223-258 (March 3) 1949

*Intestinal and Peritoneal Irrigation in Treatment of Uremia and Anuria. J. E. Poulsen and H. Haldbo.—p. 223.
*Experiences with Peritoneal Irrigation and Intestinal Irrigation in Uremia. O. Selvaag.—p. 227.
*Treatment of Uremia with Intestinal Dialysis. C. Brun.—p. 229.
Coronary Occlusion in Vaccinated Persons. M. Faber.—p. 235.
Significance of Bed Rest in Origin of Acute Attack of Arthritis Urica. M. Faber.—p. 237.
Clinical Symptoms in Thrombosis in Veins of Lower Extremities and Pelvis. B. S. Pedersen.—p. 239.

Intestinal and Peritoneal Irrigation in Treatment of Uremia and Anuria.—From personal experience and reports in the literature Poulsen and Haldbo conclude that intestinal irrigation is not justifiable in treatment of anuria as late as four or five days after onset. There is grave danger of pulmonary edema. In anuria where there is a possibility that renal function may be regained, and where more lenient methods have been unavailing peritoneal irrigation is preferred. The danger in the procedure lies partly in the washing away of protein substances and partly in the risk of infection. The importance is stressed on hourly control of the most important aspect, first of all of shock, and of readiness for serum or blood transfusion. A good technic, sterility of apparatus and use of penicillin are the decisive factors in the control of infection.

Peritoneal and Intestinal Irrigation in Uremia.—Selvaag considers extrarenal removal of urea and other toxic products from the blood by peritoneal irrigation and intestinal irrigation effective methods of treatment, calling for little technical equipment but making some demands on laboratory service. The treatment is not difficult and in the absence of better methods is recommended in oliguria and anuria with uremia threatening life and perhaps in certain intoxications. If the renal injury is due to surgical intervention in abdominal organs or results from or is accompanied with peritonitis, more complicated methods, such as the use of Alwall's artificial kidney, will be necessary. To what extent a tendency to edema or manifest edema is to be regarded as a contraindication will depend on whether a lavage fluid is available which prevents water resorption or can dehydrate the patient.

Treatment of Uremia with Intestinal Dialysis.—Brun says that all three forms of dialysis—artificial membrane, peritoneal lavage and intestinal dialysis—can in a relatively short time lead to a reduction of the urea concentration in the blood. Dialysis in uremia is dangerous and should be used only in places equipped for this type of treatment. He considers peritoneal lavage and artificial membrane the more dangerous, while the artificial membrane is probably the most effective in removing retention products from the blood but calls for great technical skill. Intestinal dialysis, which is technically simple, and peritoneal irrigation seem to be fairly similar in effect; it is doubtful that much besides urea is removed by them. Further experimentation is necessary.

Book Notices

Blakiston's New Gould Medical Dictionary: A Modern Comprehensive Dictionary of the Terms Used in All Branches of Medicine and Allied Sciences, Including Medical Physics and Chemistry, Dentistry, Pharmacy, Nursing, Veterinary Medicine, Biology and Botany, as Well as Medico-legal Terms. Editors: Harold Wellington Jones, M.D.; Norman L. Hoerr, M.D.; Arthur Osol, Ph.D. With the Cooperation of an Editorial Board and 80 Contributors. [Based on fifth edition of Gould's Medical Dictionary.] Cloth. Price, $10.75. Pp. 1294, with 252 illustrations. The Blakiston Company, Division of Doubleday & Company, Inc., 1012 Walnut St., Philadelphia 5; Toronto 2, 1949.

This dictionary, which is the first of its kind in the field of medicine, differs from other previously published dictionaries in the manner of its development. This is, as far as is known to the reviewer, the first medical dictionary to be built largely around the faculty of a medical school, utilizing at the same time the knowledge of many leaders of medicine from other medical schools. A reference to the list of contributors—unique again in any medical dictionary—reveals the authoritative character of those responsible for words and definitions in highly specialized fields.

The years that have been devoted to the development of this dictionary have called attention to medical lexicographic problems to which relatively little thought has been given previously. These problems concern such matters as obsolescence of medical words, the relative importance of proprietary or trade-marked drugs, the recognition of usage as the final authority and the decisions as to usage by leading workers in the fields concerned. In every field in which some authoritative group has established a terminology, that terminology has been emphasized.

Another feature of the dictionary is the alphabetization of all terms, including biographic, eponymic and similar designations. The illustrations are keyed to the text. Etymology is definitely associated with the important terms, and pronunciation is simplified by the use of a limited number of accents and dependence on phonetic spelling and an abbreviated key to pronunciation. When more than one pronunciation is given, the term most widely used is first.

The type is wisely chosen to aid rapid finding of any term that is sought, and the italic and Roman types used for etymology, pronunciations and definitions are exceedingly clear. Much of this clarity has been accomplished by proper white spacing. Altogether editors, publishers and contributors merit the appreciation of the medical profession on a fine production which will be an exceedingly useful tool to students, practitioners, medical authors and editors and indeed all concerned in the field of medicine.

* * *

Textbook of Pharmacology for Nurses. By Margene O. Faddis, R.N., M.A., Professor of Medical Nursing, Frances Payne Bolton School of Nursing, Western Reserve University. Assisted by Joseph M. Hayman, Jr., B.A., M.D., Professor of Medicine, School of Medicine, Western Reserve University, Cleveland, Ohio. Third edition. Cloth. Price, $3.50. Pp. 458, with 63 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1949.

The use of drugs and the observations of their effects on patients have always been important for the nurse. This importance has increased because of the potency and specificity of the agents now in common use. However, unless care is exercised, the amount of information presented in a volume for teaching or reference may be overwhelming. The authors of this book have avoided this common fault. The material is offered in an interesting style—brief but informative. At the end of each chapter is a list of questions by which the reader may estimate her knowledge. The contents are divided into twenty-nine chapters, separated into nine units: orientation to the study of pharmacology and therapeutics, drugs used for their local effects, drugs used chiefly for their effects on the nervous system, drugs used for their effect on the respiratory tract, drugs used for their effect on the circulation, drugs which affect the gastrointestinal tract, drugs which affect the reproductive system and the urinary tract, preparations used in certain diseases and protection of the public in its use of drugs and cosmetics.

The book is intended to emphasize the nurse's responsibility in the care of patients being treated with drugs. The authors have adhered to this objective in the third edition and have provided a book that is compact, up to date and easily read.

Roentgen Diagnosis of the Extremities and Spine. By Albert B. Ferguson, M.D., Associate Professor, Orthopaedic and Fracture Surgery, Boston University. Annals of Roentgenology, a Series of Monographic Atlases, Volume XVII. Second edition. Cloth. Price, $15. Pp. 519, with 631 illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 49 E. 33d St., New York 16, 1949.

This edition has been increased by 77 pages over the original edition. The first sixteen chapters are in all essence the same as the original volume. This applies both to text and to illustrations. There are only a few minor changes in the text. Chapters 17 and 18, however, are valuable new additions to this volume and the subject. Chapter 17 is a new chapter on specific tumors. This deals with the radiologic aspects of diagnosis in such a manner as to emphasize probabilities based on certain groupings, for example, according to age; seat of tumor, such as the humerus or femur; site of tumor, such as medullary or subperiosteal, and other characteristics. The author's approach should be of assistance to the radiologist, reducing probabilities in the diagnosis of specific cases. The eighteenth chapter deals with primary bone malignancy. It discusses the radiologic characteristics of primary lesions in an effort to differentiate them from secondary metastatic lesions. Both these chapters are well illustrated and form a valuable addition to the volume. The final chapter on the spine has been somewhat rearranged with some important additions. The author has gone into more detail with certain aspects of radiologic diagnosis of spinal lesions. Considerable space is given to the discussion of various static abnormalities of interest to the radiologist. The changes in this chapter have improved materially the subject matter as it appeared in the original volume. On the whole, for those who do not have the first edition it is an excellent reference volume. For those having the first edition the reviewer believes that the additional chapters and the change in the substance of the chapter on the spine make the book well worth having.

Studies on Hookworm Disease in Szechwan Province, West China. By K. Chang and Co-Workers. The American Journal of Hygiene Monographic Series, No. 19, May, 1949. Supported by the De Lamar Fund of The Johns Hopkins University. Cloth. Price, $3. Pp. 152, with 43 illustrations. Johns Hopkins Press, Homewood, Baltimore 18, 1949.

The present monograph is the first of a series of investigations on intestinal parasites in the Szechwan province, West China. Attention is directed to the prevalence, distribution and importance of hookworm, the factors involved in infection and dissemination and effective methods of control under local conditions. Later studies will consider Ascaris and Endameba histolytica.

Szechwan has a population in excess of 46,000,000. About 90 per cent of its inhabitants are supported directly or indirectly by agriculture. In considering the transmission of hookworm, the authors point out that hookworm in other parts of the world is largely the result of repeated promiscuous defecation near houses and the consequent human contact with infected soil. The disease in China, on the other hand, is an occupational one, largely restricted to agricultural classes who carefully conserve and utilize human excrement as fertilizer. The soil is infected as crops are fertilized, and human infection is brought about by contact of the human skin with soil in the fertilized fields. Such optimum conditions for the spread of hookworm are, however, not a universal accompaniment of the use of human excrement, but are present only as a result of methods employed for certain crops.

The authors have made an outstanding analysis of the role of agricultural factors in the spread of the disease. Among many important findings the following may be mentioned: Peculiar conditions prevent mulberry cultivation from being conducive to hookworm dissemination as in other parts of China. Cultivation of rice, sugar cane and citrus fruits are not associated with severe hookworm disease. Although vegetable gardeners become infected, the unique system of intercropping corn and sweet potatoes is responsible for most of the severe hookworm disease in the province. During the transplanting of sweet potato vines in the cornfields, there is a long and intimate contact between the human skin and infected soil.

Control of infection is unusually difficult under prevailing local conditions. The authors emphasize the need of establishing free clinics for specifically treating the disease in endemic centers, for programs directed toward nutritional betterment, including the administration of iron, and for certain modifications in the intercropping of corn and sweet potatoes. They point out that although disinfection of night soil, either by prolonged storage or by the use of chemicals, is fundamentally important, it is not feasible under present conditions. Neither is the substitution of other fertilizers possible.

The National Health Service [with Appendices I-XIV]. By Charles Hill M.D., and John Woodcock. Cloth. Price, 16s. Pp. 283; cl. Christopher Johnson Publishers, Ltd., 109 Great Russell St., London, W.C. 1, 1949.

The authors state the purpose of this book as one of "explaining in language as simple as accuracy permits the anatomy and physiology of the National Health Service as it is at the outset of the Service" (p. vii). They have done that job well in so far as any law which deals with the details of personal lives can be couched in simple terms. The basic structure of the National Health Service stands out clearly from the mass of different committees, areas and schedules of fees.

The book deals mainly with the administrative functions of the service—the expropriation of existing institutions, the arrangements made to cover the interim period before the service could be completely organized, the composition and duties of the various bodies created to carry out the purposes of the law, the range of services to be available and the provisions for payment of practitioners and institutions. While discussing the benefits available to the general public such as hospital, specialist, general medical, dental and pharmaceutical services, it also sketches the conditions under which private care may be continued. The various appendixes contain the names of persons serving on the various central committees, the hospitals included in or disclaimed from the service and details on compensation and terms of service for medical practitioners. The index provides a ready means of reference to the material in the book.

The introduction to the book points out that "it is the *promotion* of the establishment of a comprehensive health service which is imposed as a duty on the Minister, though the Act does not confer on any citizen a legal right to a complete service" (p. 1). Since the service is financed four fifths by general revenues and only one fifth by a payroll tax, the system in no way confers on citizens the same rights as holders of private insurance policies. The British government will attempt merely "to remove such financial barriers as exist between the community and the existing services and to initiate new forms of administration and organization for their development" (pp. 1-2).

This book is excellently adapted to its purpose of making clear the general organization of the new British Health system. It makes no valued judgments as to the reasons for instituting the system or as to the best way of organizing the services once nationalization has been adopted. It should be most valuable as an explanation of the administrative technic used in a new experiment in national health insurance.

Techniques in Physiotherapy. Edited by F. L. Greenhill, S.R.N., M.C.S.P., T.H.T., Sister-in-Charge, Medical Rehabilitation Unit, Royal Free Hospital, London. Assisted by C. B. Heald, C.B.E., M.D., F.R.C.P.; J. N. Barron, F.R.C.S., and J. Colson, M.C.S.P., M.A.O.T. Cloth. Price, 12s 6d. Pp. 222, with 45 illustrations. Hodder & Stoughton, Ltd., St. Paul's House, 20 Warwick Sq., London, E.C. 4, 1948.

This book purports to present "some of the newer concepts of physical methods and their application to the problems of rheumatism and other medical and surgical ailments." Aside from the two chapters written under the supervision of qualified physicians, the one on rheumatism and arthritis prepared with the aid of Dr. Heald and the one on burns and injuries of the hand prepared with the aid of Mr. Barron, the book is a veritable mine of misinformation. It is sad to observe that the author not only does not know what she is talking about but also does not even know that she does not know. The book is studded with such ridiculous statements as: For restoration of lymphatic flow "the current of choice is the direct current, the positive pole acting in the direction of the lymph stream. . . . Lymph and body fluids generally tend to pass from the positive to the negative pole." In treatment for thromboangiitis obliterans, three things only are recommended: short wave diathermy applied directly to the affected extremity, "histamine ionisation" and Buerger's exercises. It is suggested that the diathermy be applied as "a long application of twenty-five to thirty minutes once a week." No warning is given about the danger of applying diathermy to an extremity in which the circulation is impaired. There is no realization of the fact that twenty-five to thirty minutes of diathermy is not usually considered a long exposure by most experts in physical medicine, and there is no realization of the fact that any physical treatment which is given only once a week is almost certain to be inadequate. The author does not realize that the term "ionisation" is incorrect when used in the sense in which it is used in this text and calls ionization "a generic term meaning that treatment effects will rely upon the introduction of a known therapeutic 'ion.'" She speaks of iontophoresis as a term which was "formerly applied to direct current when this was used for ionisation." The Council on Physical Medicine of the American Medical Association pointed out long ago that term "ionisation" should not be employed but that the term "ion transfer" or the term "iontophoresis" should be used in describing the introduction of ions of certain medicinal substances into the bodily tissues.

It is useless to waste the reader's time with further references to the numerous mistakes and irrational recommendations. This textbook shows vividly what may happen when a person trained only in a limited field of therapy attempts to discuss indications and physiologic effects. It would be dangerous to place it in the hands of a physical therapy technician who might not appreciate its shortcomings. The intelligent physician certainly will be aware of its deficiencies and may become antagonistic toward this important branch of therapy. This book is not recommended. Not only will it misguide the technician but also it will probably antagonize any well-informed physician.

The Theory of Play. By Elmer D. Mitchell, Ph.D., Professor of Physical Education, University of Michigan, Ann Arbor, Mich., and Bernard S. Mason, Ph.D. Second edition. Cloth. Price, $4.50. Pp. 542. A. S. Barnes & Company, 101 Fifth Ave., New York 3, 1948.

All aspects of this many-faceted subject are presented by the authors of this revised and enlarged edition of a book that has had a long and serviceable career. As the authors note, the many significant changes that have taken place in the field of recreation in the last two decades make revision at this time desirable.

Divided into four parts, the volume opens with an instructive review of the historical background of play. In part 2 is discussed the theory of play, in part 3 the need for play and in the last section administration of play.

Perhaps the most significant of these is that considering the need for play, in which the authors review in four chapters the many benefits provided by proper utilization of play. Special emphasis is given in this section on health instruction in schools. To the authors' credit, they have presented in proper focus the physical findings during the World War II draft and emphasize the constructive lessons learned when play and exercise were employed as a means of conditioning those in the armed forces. This is elaborated still further in the next chapter, on the physical benefits of play.

Although primary interest in this volume is in the field of education, sociology and physical education, it is a rich source of informative background for every physician who has professional contacts with school or public health activities. Special chapters on school athletics and organization of play activities will provide many helpful suggestions in this field. Other chapters of interest are those on public play areas and summer camps.

Well annotated and with extensive lists of selected references at the close of each chapter, the book serves equally well as a textbook and a reference. It is of special value as a working tool for all who are actively engaged in the many fields where play is a factor.

Handbook of Materia Medica, Toxicology, and Pharmacology for Students and Practitioners of Medicine. By Forrest Ramon Davison, B.A., M.Sc., Ph.D. Fourth edition. Cloth. Price $8.50. Pp. 730, with 35 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

This edition has been revised to bring up to date the discussions concerning the use of drugs. The objective of the author still is to present information for the medical student and the practicing physician.

Female Sex Endocrinology: Concise Therapy. By Charles H. Birnberg, M.D., Associate Obstetrician, Chief of Female Sex Endocrinology, and Endocrine Laboratory, Jewish Hospital of Brooklyn, Brooklyn, N Y. Cloth. Price, $4. Pp. 134, with 31 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2; 2083 Guy St., Montreal, 1949.

This small book was prepared to serve as a quick reference on endocrinologic problems. Perhaps because of this the author has glib plans of treatment for many gynecologic disturbances. He advises a simple office procedure for stimulating ovulation which consists of cervical dilatation without anesthesia to the point of pain, using graduated cervical dilators. This procedure is done once a month five to seven days after menstruation has stopped and is repeated monthly for six months or more if need be. Perhaps during this time, ovulation would have occurred spontaneously. Other treatment for absence of ovulation consists of estrogens followed by progesterone for three or four consecutive months. For amenorrhea, the author prescribes intravenous use of pregnant mare's serum, plus estrogens and progesterone, given over a period of three months, repeated if necessary after an interval of three months. In the discussion on dysmenorrhea, androgens are recommended for the suppression of gonadotropic production of the pituitary. This treatment is repeated every other month for a year. Most gynecologists use estrogens for this purpose. Pelvic sympathectomy for intractable cases is not mentioned. For climacteric distress, the author advises hypodermic medication first and oral preparations only if the patient cannot take parenteral medication. This sequence should be reversed. The author mentions implantation of pellets for the climacteric, but since there are potent and satisfactory oral preparations there is no need for implanted pellets. For women who have had habitual abortions, progesterone is prescribed in the second half of the mentrual cycle before the period is missed. After the patient misses a period the following array of hormones is given: progynon D-H, prolactin, progesterone and alpha estradial benzoate. This therapy yielded 92 per cent successes in 100 cases of repeated miscarriages, a remarkable achievement.

In spite of the foregoing criticisms, the book contains a great deal of useful information. The author is a competent endocrinologist who has had considerable experience, but in the opinion of the reviewer he is too enthusiastic about what can be accomplished with hormone products.

Vitamins and Hormones: Advances in Research and Applications. Edited by Robert S. Harris, Professor of Biochemistry of Nutrition, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth V. Thimann, Associate Professor of Plant Physiology, Harvard University, Cambridge, Mass. Volume VI: With Cumulative Subject Index of Vols. I-V. Cloth. Price, $7.80. Pp. 435. Academic Press, Inc., 125 E. 23rd St., New York 10, 1948.

Thirteen researchers have contributed to this volume. Included in the contents are discussions of the chemistry and biologic action of pteroylglutamic acid and related compounds, vitamin K, nutritional requirements of the cotton rat and hamster, vitamins as pharmacologic agents, the assessment of human nutrition, vitamins in micro-organisms—distribution and quantitative synthesis, the B vitamins as plant hormones and the influence of adrenal cortex on the metabolism of water and electrolytes. While much of the information will assist the medical student and practitioner in understanding some of the problems related to the actions and uses of hormones and nutritive principles, the book obviously is a reference source and most useful for those with research interests.

Zinc Ions in Ear, Nose, and Throat Work. By A. R. Friel, M.D., F.R.C.S.I. Cloth. Price, $2. Pp. 60, with 42 illustrations. John Wright & Sons, Ltd., 42-44 Triangle West, Bristol 8, England; Williams & Wilkins Company, Mt. Royal & Guilford Aves, Baltimore 2, 1948.

The author of this small book became interested in zinc ionization shortly before World War I. As a result of his enthusiasm the procedure has had a degree of popularity in England, especially in school clinics, for the treatment of chronic otorrhea. The section dealing with the clinical application of zinc ionization and zinc electrolysis in chronic otorrhea describes Dr. Friel's experiences with tympanic sepsis, tympanic sepsis with granulations and polypi, attic and mastoid disease and external otitis.

A discussion of the procedure in hay fever and vasomotor rhinitis, a subject which intrigued some American rhinologists in the middle 1930's, occupies but two paragraphs. The third, and final, chapter briefly describes zinc electrolysis with special reference for destroying tissue in the nose and throat, as in the treatment of turgescence of the inferior and middle turbinates and the destruction of tonsils in adults. The curious reader may wish to read the book for the sake of becoming acquainted with zinc ionization. The evidence presented, however, will convince few American rhinologists and otologists.

The 1948 Year Book of Endocrinology, Metabolism and Nutrition. Endocrinology. Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Metabolism and Nutrition. Edited by Tom D. Spies, M.D., Chairman, Department of Nutrition and Metabolism, Northwestern University School of Medicine, Chicago. Cloth. Price, $4.50. Pp. 544, with 83 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1949.

This is the third volume of the Year Book of Endocrinology, Metabolism and Nutrition. The authors have selected contributions that appear to have practical application to the knowledge and treatment of disease. While emphasis has been placed on observations of man, results of animal experiments have been included which seem to have definite bearing on the understanding of disease. In the section on endocrinology are discussions related to the pituitary, the thyroid, the parathyroids, the adrenals, the testes and the ovaries. The section on metabolism and nutrition includes discussions relating to the pancreas and liver, the alimentary tract, the hemopoietic, cardiovascular, cerebral and neural, genitourinary, dermal, muscular and skeletal systems and to malnutrition and undernutrition. In addition, there is a chapter devoted to therapy which is intended primarily for medical practitioners and students who are particularly interested in the role of food in the maintenance of health.

Each chapter consists of a collection of condensations or abstracts of articles that have appeared in various journals. Often editorial notes appear at the end of the abstracts, and sometimes these notes are more significant than the abstracts.

Histology and Histopathology of the Eye and Its Adnexa. By I. G. Sommers, M.D., Assistant Professor (Ophthalmology), College of Medical Evangelists, Los Angeles, Calif. Cloth. Price, $12. Pp. 784, with 69 illustrations. Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

Here, at last, is a most complete volume in English on the eye and its histopathologic conditions, written by a Vienna-trained ophthalmologist who has spent many years in the United States and who understands teaching and the needs of the American or English-trained physician. From a simple perusal of the table of contents, which includes a preface; part I, Normal Histology, Embryology and Senescence; part II, General Pathology; part III, Histopathology of the Eye, and an index, with subtitles, it is readily noted that the author has a rational and logical approach. Discussions of source material and bibliographies are found at the end of part I and part II and at the end of each chapter of part III. In the preface the author gives an account of the literature in years prior to 1920 as noted in Henke and Lubarsch's comprehensive work. References are most complete. Every ophthalmologist, general histologist and histopathologist will indeed consider this as the "bible" of this subject in the English language.

Minutes of the Fourth Streptomycin Conference Held on October 9, 10, 11 and 12, 1947, at Branch Office 9, St. Louis, Mo. Recorded, edited and published by Veterans Administration Branch Office No. 9, St. Louis, Mo. Paper. Pp. 83, with illustrations. Veterans Administration, Branch Office No. 9, St. Louis, Mo.; Washington 25, D. C., [n.d.]

Minutes of the Sixth Streptomycin Conference, Held on October 21, 22, 23 and 24, 1948, Auditorium of the Ramsey County Medical Society, St. Paul, Minn. Prepared and edited by Veterans Administration, Branch Office No. 8, Tuberculosis Section, St. Paul, Minn. Paper. Pp. 317, with illustrations. Veterans Administration, Branch Office No. 8, Tuberculosis Section, St. Paul, Minn.; Washington 25, D. C. [n.d.].

These pamphlets present summaries of the proceedings of the fourth and sixth conferences of a large group of researchers engaged in a cooperative investigation of the effects of streptomycin in human tuberculosis. The conferences were organized under the auspices of the Veterans Administration.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF COMMON COLDS

***To the Editor:*—The public is constantly bombarded with advertisements relative to common cold remedies. What is the attitude of the medical profession toward this procedure and what specific advice should a physician offer his patients as to the purchase of basic drug requirements (acetylsalicylic acid, nose drops, cough syrup and gargles) in combating the common cold?**

M.D., California.

ANSWER.—Authoritative medical opinion supports the view that no substance or combination of substances available at present can be relied on to prevent or cure the common cold. Recent surveys of products which now appear on the market reveal that many of them make claims involving the treatment or prevention of colds which are not justified by valid evidence. Advertisers exaggerate the effects which the medicaments will have on symptoms. Nevertheless, the public will continue to spend huge sums of money unnecessarily on obsolete, illogical remedies, such as rubbing remedies, salves and ointments, until it is educated to the foolishness of such practice. A number of simple agents and measures exist which families can be taught to employ for temporary relief and from which little harm will result.

The use of nose drops and inhalants probably ranks first among measures taken by the public to relieve colds. Nasal vasoconstrictors afford symptomatic relief for varying periods but are not curative. Liquid nasal medicaments which function on a rational, physiologic basis are compatible with ciliary activity, do not vary greatly in their p_H (5.5 to 6.5) from that of normal nasal secretions, are isotonic and are noninjurious and nontoxic. Prolonged and excessive use of nose drops and volatile inhalers occasionally results in secondary rebound congestion of the nasal mucous membranes. Prolonged administration of silver salts can produce argyrosis, while the continued use of nasal preparations containing mineral oil sometimes leads to the development of lipid pneumonia.

Although popular with the public, gargling has little therapeutic utility. Ordinarily, gargles do not provide medication behind the anterior pillars of the fauces. A number of investigators find that gargled materials will not pass beyond the third molar tooth, thereby reaching neither the tonsillar nor pharyngeal areas, because the act of gargling produces a restrictive influence. In most cases of acute, uncomplicated pharyngitis, a reasonable amount of relief may be obtained by irrigating the throat with hot, isotonic solution of sodium chloride by means of syringes or modifications of a douching apparatus.

Acetylsalicylic acid does not have any influence on the infectious process of the common cold. Symptomatic relief of headache, fever and muscle pain is, nevertheless, of value as long as the drug does not disguise the need for more vigorous treatment. A false sense of improvement may occasionally occur, thereby permitting the patient to resume activity too soon. Numerous cough mixtures to which laymen resort without the advice of a physician are of doubtful value. Expectorants or respiratory sedatives are best prescribed by the physician, as the preparation of the cough mixture should be governed by the type of cough and the age of the patient.

From time to time claims are advanced for special diets for either the prevention or the cure of colds. The dietary measures most frequently recommended for the prevention of colds include a high protein diet, a diet low in carbohydrates and large quantities of citrus foods, presumably to establish "alkalinization." None of these theories is supported by carefully controlled studies. The supplying of extra vitamins and other food elements to the person who does not show signs of deficiency disease does not protect him against colds. Procedures which have as their objective the conditioning of the body to sudden changes in external temperature of the skin, such as cold and hot shower baths, do not lower the incidence of the common cold. The scientific evidence against the value of oral cold vaccines is overwhelming.

The treatment of the common cold consists mainly in the relief of symptoms as they arise. Treatment should never be standardized but should be suited to the needs of each patient. During the earliest stages of the common cold the prime objective is to supply moisture by means of steam inhalations to the stricken upper respiratory passages. Alcohol has been utilized for generations to abort impending colds or to treat them. In reasonable doses it causes peripheral vasodilatation and reestablishes circulation in chilled cutaneous and mucosal surfaces. Little attention need be paid to fluids in the average uncomplicated cold; it is probably best to let thirst to a great extent determine the fluid intake. Cathartics and laxatives, long employed as home remedies for colds, do not have particular value; their excessive use may lead to dehydration. Rest in bed, especially if fever is present, diminishes the severity of the common cold, limits its spread to others and reduces the frequency of complications. It has stood the rigid test of time as a most sane and effective measure.

TOXICITY OF TETRACHLOROETHYLENE

***To the Editor:*—One of my patients is much concerned over the possible deleterious effects of exposure to the fumes of perchloroethylene (tetrachloroethylene), philsolv® and tri-clene.® What is the toxicity of these compounds? Recently hypertension developed in the patient. Blood pressure was 170 systolic and 120 diastolic. A complete blood cell count and urinalysis failed to reveal abnormality.**

Charles H. Kosmaler, M.D., Elmira, N. Y.

ANSWER.—Tetrachloroethylene, philsolv,® a trademarked product that is basically tetrachloroethylene, and tri-clene,® a proprietary trichloroethylene preparation, are used in industry as degreasing agents. The active constituents, tetrachloroethylene and trichloroethylene, have similar toxic potentialities but of a lower order than the related chlorinated hydrocarbons, chloroform and carbon tetrachloride. Concentrations of 160 to 200 parts per thousand for tetrachloroethylene and trichloroethylene are tolerated. Concentrations in excess of these amounts predispose to stupor, dizziness, excessive perspiration, nausea and vomiting. Individual susceptibility to these compounds varies greatly. Chronic industrial poisoning with tetrachloroethylene shows a series of organ changes which point to metabolic disturbances. There may be slight injury to the heart, lowering of the blood pressure, a variable degree of liver damage and occasionally degeneration of the epithelium of the renal tubules. Chronic trichloroethylene poisoning causes polyneuritis, including paresthesia and disturbed sensibility in the extremities, paralysis of the trigeminal nerve, disorders of vision by optic nerve atrophy, and permanent blindness from retrobulbar neuritis.

There is no evidence to indicate that these compounds would be the immediate cause of the patient's hypertension. They have a dilating effect on the blood vessels, thereby lowering the blood pressure. Unless there has been sufficient renal damage incurred in their long-continued use to account for the hypertension, another causative factor should be sought.

SULFAMYLON®

***To the Editor:*—1. Is sulfamylon® commercially available, and what are its uses? 2. What expectorant drugs are of value in (a) asthma and (b) acute laryngotracheobronchitis? Many commercial expectorants contain small amounts of codeine. Goodman points out that this is irrational because codeine tends to thicken bronchial secretions.**

Paul Russell, M.D., Inglewood, Calif.

ANSWER.—1. Sulfamylon® (4-aminomethyl benzene sulfonamide hydrochloride), also known as marfanil® or mesudin,® has been the subject of a number of clinical reports, particularly in the German medical literature. The drug was first investigated in the United States and discarded because its activity in mice against streptococci was low. Its properties have been described by Miller and his colleagues (*J. Am. Chem. Soc.* **62**: 2099-2103 [Aug.] 1940) and by Klarer (*Klin. Wchnschr.* **20**: 1250, 1941). The drug cannot be used systemically because it is largely inactivated in the blood stream, but it appears to have some value in the local treatment of wounds. Fox (*Ann. Otol., Rhin. & Laryng.* **56**: 946 [Dec.] 1947) discussed the use of sulfamylon® in rhinosinusitis and found it a satisfactory agent for controlling the acute stage of this disease. W. B. Clark (*Arch. Ophth.* **38**: 682 [Nov.] 1947) used the drug in ocular infections in which Pseudomonas aerugenosa was a secondary contaminant with satisfactory results.

Sulfamylon® has not been presented to the Council on Pharmacy and Chemistry, and there is no record of its distribution for other than clinical trial in this country.

2. (*a*) There is some question regarding the advisability of using any of the so-called expectorants in asthma. Recently, Gay and Long (THE JOURNAL, February 12, p. 452) found that isopropylepinephrine (isuprel,® isonorin,®) when used as a bronchodilator by inhalation also provides the type of benefit desired from an expectorant.

(*b*) Sollmann (A Manual of Pharmacology, ed. 7, Philadelphia, W. B. Saunders Company, 1948, p. 777) lists the following expectorants as sufficient to meet most needs: (1) against dry congestion: syrup ipecac, 1 cc., or antimony potassium tartrate, 5 mg.; (2) against thick secretion: ammonium chloride, 0.3 Gm.; potassium iodide, 0.25 Gm.; (3) against excessive thin secretion: terpin hydrate, 0.15 Gm. in capsules, and (4) against irritation: codeine, 5 mg., or alkaline gargles. It should be noted that codeine is not an expectorant but depresses the cough reflex. An excellent article on the use of expectorants was published by Brown in THE JOURNAL, July 24, 1937, page 268.

OXYTOCIC DRUGS IN PREGNANCY

To the Editor:—What is the consensus on use of beta-hypophamine and other oxytocic drugs in second and third stages of labor?

Philip Levey, M.D., Los Angeles.

ANSWER.—There is difference of opinion concerning the use of oxytocic drugs in the first and second stages of labor. In some countries these drugs are used almost routinely during the first stage to shorten labor, but this practice is strongly condemned by all authorities in the United States. However, in some institutions pituitary extract is used frequently in the first stage of labor if labor pains are weak or if there is true uterine inertia. This is done at the Johns Hopkins Hospital and at Harvard University. Eastman (*Am. J. Obst. & Gynec.* **53:** 432 [March] 1947) reported the use of these drugs in 463 cases of uterine inertia observed during the last five years. Reid (*Am. J. Obst. & Gynec.* **52:** 719 [Nov.] 1946) reported the results of the use of pituitary extract in 1,609 cases of prolonged labor. The results in these two institutions are excellent. However, the administration of pituitary extract in the first and second stages of labor in the hands of those untrained in its use is dangerous. Maternal and fetal deaths have resulted from the use of these oxytocic drugs in the first and second stages of labor and even for the induction of labor. In the second stage particularly, oxytocics are powerful drugs. In a multipara the drug should be safe after complete dilatation, but in a primipara it may be wiser to employ a low forceps operation than to use pituitary extract. Certainly if the head is not on the perineum in the second stage the drug should never be used.

Practitioners who have not had special training in obstetrics should almost never use oxytocics before the uterus is emptied of both baby and placenta. In rare cases of uterine inertia they may resort to small doses of pituitary extract, such as ½ or 1 minim (0.03 or 0.06 cc.) doses, or preferably diluted pituitary extract. In the second stage the safest oxytocic is ergonovine maleate, but even this should not be given until the baby's head and anterior shoulder have been delivered. In the third stage oxytocic drugs have their greatest field of usefulness. They should be employed whenever bleeding is excessive, when the placenta has been removed and even when the placenta is still in the uterine cavity.

CANCER OF THE ANUS

To the Editor:—A man, 61, has had a small tumor situated directly beside the anus removed twice by thermocautery. The tumor was considered to be a papilloma or nonspecific condyloma. It was not examined histologically at the time of the first operation, twelve years ago. The second, removed one and one-half years ago, was said to consist histologically of "scar tissue." This time the small growth was deeply excised and proved to be a squamous carcinoma. 1. What is the probability of a local relapse in this case? 2. What are the probabilities of metatases? 3. Can ablatio recti plus artificial anus and clearing of inguinal nodes be avoided by roentgen irradiation and examining of the inguinal nodes at short intervals? 4. Is there a reliable biologic test for determining the presence of carcinoma?

M.D., Massachusetts.

ANSWER.—Squamous cell epitheliomas comprise slightly more than 1 per cent of all carcinomas of the anus and rectum. In about 60 per cent of 127 cases of squamous cell and basal cell epitheliomas of the anus studied by Jackman the degree of malignancy was grade 3 or grade 4 according to Broders' classification. Contrary to usual opinion, it was found in this same group of patients that metastases to the inguinal nodes and extension by way of the blood vessels are relatively uncommon. Most of these tumors invaded the rectum by direct invasion, and metastases through the rectal lymphatic channels was common. In about 50 per cent of this group of 127 cases treatment consisted of radical surgery alone and, in the other 50 per cent, of radiation alone or in combination with surgery. Forty-five per cent of the patients survived five years. The consensus is that radical surgery combined with radiation therapy is the most suitable form of treatment.

At present there is no reliable biologic test to determine the presence of carcinoma.

TREATMENT OF DERMATITIS HERPETIFORMIS

To the Editor:—For seven months now, since the birth of a girl, my wife has had a pruritic, vesicular, reddish rash appearing in the sacral and gluteal areas, elbows, knees and about the nose and face which has been diagnosed as dermatitis herpetiformis. She has tried large doses of para-aminobenzoic acid, diphenhydramine hydrochloride and tripelennamine hydrochloride with temporary relief. She gets severe headaches, nausea and occasional vomiting with sulfapyridine. Is there a new means of treatment or desensititization to the infective organism? Is it possible to desensitize a person to sulfapyridine?

M.D., Washington.

ANSWER.—When the cause of a disease is not known, the number of remedies recommended for it is apt to be large and so the list of treatments for dermatitis herpitiformis includes sulfonamide compounds, penicillin, arsenicals, autogenous blood, sodium thiosulfate, antihistaminic preparations, quinine and liver extract. All of these are of some value in controlling the disease, but they do not cure it. In some cases when sulfapyridine, usually the most effective drug, fails to give improvement, a change to another sulfonamide compound, such as sulfadiazine, may prove useful. Untoward reactions to sulfonamide drugs are not necessarily due to allergic hypersensitiveness. They may be due to retention of the drug, and in the latter case attempts at desensitization may be dangerous. If necessary, active desensitization by means of gradually increased small doses of the drug may be attempted. Failures, however, are more common than success. The whole problem of desensitization to drugs is still unsettled. It might be well in this case to prescribe Fowler's solution for a short time only, generalized ultraviolet radiation and an antihistaminic preparation, since it affords temporary relief. Ointments or lotions containing 2 to 3 per cent sulfur are often useful.

DERMATITIS HERPETIFORMIS

To the Editor:—A 55 year old white man has had dermatitis herpetiformis for about five years. Physical examination, including routine urinalysis and blood cell count, did not reveal any other significant abnormality, except a squamous cell carcinoma of the skin of the dorsum of the right hand. This latter was removed, and the patient was given roentgen therapy; there is no evidence of return of the carcinoma after three months. He has had a variety of treatment, including sedatives, antihistamine drugs, ultraviolet and roentgen irradiation, sulfadiazine and various lotions, all to no avail. I recently gave him potassium arsenite solution U.S.P. with relief of symptoms while he was taking it. After conferring with a dermatologist who stated that there is some danger of arsenical keratosis, I wonder whether to continue this therapy. What is the risk of this complication? Would 2,3-dimercaptopropanol (BAL) be of any value if keratosis occurs? Would other forms of arsenic be of value?

M.D., Kansas.

ANSWER.—Fowler's solution sometimes produces precancerous keratoses. It would seem better, therefore, not to use it in a person who already has had a squamous carcinoma. Fowler's solution, in addition to familiar drug reactions, may also produce hyperpigmentation and neither the keratoses nor the pigmentation respond to treatment with BAL. The remedies recommended for the treatment of dermatitis herpetiformis includes, in addition to Fowler's solution, trivalent arsenicals, sulfonamide compounds, penicillin, sodium thiosulfate, antihistaminic preparations, quinine, autohemotherapy and liver extract. Sulfapyridine in most cases controls the disease effectively and usually with but small doses (5 grains [0.3 Gm.] three times a day). It does not cure the disease, but fortunately dermatitis herpetiformis usually spends itself in time.

RH SENSITIZATION BY TRANSFUSION

To the Editor:—A patient is Rh negative and has been sensitized by a transfusion. She has had 2 normal children; after the second delivery she received a transfusion which sensitized her. Six months ago she had another baby, which lived two days and died of typical erythroblastosis fetalis. She is insistent on not having a curettage. Is there any recent development that would provide this woman with a ray of hope?

W. J. Klinck, M.D., Lennoxville, Quebec, Canada.

ANSWER.—This question could be answered more satisfactorily if more details had been furnished regarding the recently deceased child. If the infant died in spite of adequate treatment with transfusion of Rh-negative blood, the prognosis in case of a new pregnancy would be worse than if the infant had not been so treated. In the latter case, one could hope that treatment of the baby to be born may be effective in saving it as it does in the majority of cases of erythroblastosis. The 2 living children and the husband's parents should be tested for the Rh factor and if any of them are found to be Rh negative, the husband's heterozygosity with regard to the Rh factor will be demonstrated. That would mean that he may give issue to an Rh-negative healthy child. If the husband's type is Rh_1(CDe), testing his blood with anti-Rh' (anti C) serum may also establish whether he is heterozygous. Carter (Rh Hapten: Its Preparation, Assay and Nature, *J. Immunol.* **61**:79-88 [Jan.] 1949) reported recently that injection of Rh hapten during pregnancy can prevent erythroblastosis in the infant. If confirmed this treatment would be the answer to this woman's as well as to all other similarly affected women's prayers.

METAL PICKLING

To the Editor:—What information have you on the effects of inhalation of fumes of hydrochloric acid (50 per cent) in the process of pickling steel? Would there be changes in the nasal turbinates such as polyp formation? Workers are essentially unprotected.

M.D., Pennsylvania.

Answer.—A 50 per cent hydrochloric acid concentration in metal pickling is most unlikely, since the concentrated commercial acid is only about 38 per cent. A 5 per cent solution is closer to average concentration for steel pickling. The anhydride of hydrochloric acid is hydrogen chloride. This gas is highly irritating and most tolerance standards are based on this state. In solution, as in pickling vats, hydrochloric acid has lost its dehydrating properties and thereby becomes of diminished physiologic concern. Although hydrochloric acid pickling is ordinarily a cold process, acid does reach the atmosphere due to the fact that highly numerous hydrogen bubbles formed at the metal face, on bursting at the liquid surface, "spit" acid into the atmosphere. Although harmful prospects are not high, such acid may produce irritation to any or all mucous tissues and to the teeth. Chiefly the damage, if any, is limited to the upper part of the respiratory tract. If severe damage occurs, which is not anticipated from a 5 per cent pickling bath, erosion of teeth and membranes may arise. Septal ulceration has been described. Polyp formation is not an expected lesion.

HYPERTHYROIDISM

To the Editor:—I have a patient, a 41 year old white woman, with classic symptoms of hyperthyroidism, including mild exophthalmus and a basal metabolic rate of 45. I have advised her to have an operation, but she has been advised elsewhere that she can be treated adequately with radiation therapy without surgical intervention or medication. I would appreciate your counsel on the use of radiation therapy in the treatment of hyperthyroidism.

M.D., Alabama.

Answer.—Roentgen therapy for exophthalmic goiter is not satisfactory and is rarely used at present. The best method of treating the patient probably would be to perform a subtotal thyroidectomy after adequate preoperative preparation with propylthiouracil and iodine. A fairly large percentage of patients can be treated satisfactorily with propylthiouracil alone, and probably a still larger percentage with radioactive iodine without surgical intervention. In most clinics up to the present time, these two methods of medical management of exophthalmic goiter have been used in patients who presented poor risks for operation.

CHRONIC CONJUNCTIVITIS

To the Editor:—What is the proper treatment for chronic conjunctivitis which is due to infection with Trichomonas vaginalis?

M.D., Wisconsin.

Answer.—Trichomonas vaginalis is an extremely uncommon cause of conjunctivitis. In vitro studies (Trussell, R. E., and Johnson, G.: Experimental Basis for the Chemotherapy of Trichomonas Vaginalis Manifestations, *Am. J. Obst. & Gynec.* **48**: 215, 1944) indicate that many of the antiseptics in common use in ophthalmologic practice are effective. Application of 0.5 per cent silver nitrate to the palpebral conjunctiva combined with a local antiseptic or sulfonamide preparation should be effective. Additionally, irrigation of the lacrymal sac, prevention of contamination of the conjunctiva by the fingers and treatment of Trichomonas infestation elsewhere are indicated.

RADIOACTIVE THERAPY IN HODGKIN'S DISEASE

To the Editor:—Several patients have asked me about the use of an "atomic cocktail" in Hodgkin's disease. Please comment.

William Hibbitts, M.D., Texarkana, Texas.

Answer.—The raising of false hopes for persons who have lymphoblastoma and Hodgkin's disease by vivid accounts in the lay press of the beneficial effects of "atomic cocktails" is to be lamented. The principal treatment for Hodgkin's disease at this time consists of roentgen rays administered by one well [illegible] in the handling of this disease by this mode of treatment. When the disease has no longer responded to roentgen rays, various radioactive isotopes have been administered by injection, and in some instances these seem to bring about a remission that would not be expected from localized irradiation of affected glands. The beneficial effects, if they ever accrue, are only temporary. Some have maintained that the use of radiophosphorus is merely another form of giving roentgen therapy and that the two methods are interchangeable but that one does not possess a special virtue over the other. Your patient may be assured that "atomic cocktails," which really mean ingestion of radioactive materials, offer nothing special and that their use is not "brand new," as radiophosphorus has now been employed for several years in special centers.

AREAS OF BALDNESS

To the Editor:—A patient, age 47, was operated on for appendicitis when 16, at which time the right ovary was removed. She has had one miscarriage and two induced abortions. The blood and spinal fluid are normal. The hair on the vertex is very thin, and there are areas suggesting alopecia; one small area is noticeable at the right temple. The patient does not have dandruff. Specify the danger of the use of hormones in a case of this sort. What estrogen would you suggest?

G. C. Kilpatrick, M.D., Mobile, Ala.

Answer.—Areas or patches of baldness might be due to alopecia areata, which is treated by stimulating measures, such as massage, painting the areas with liquid phenol (neutralize with alcohol quickly), irradiation with ultraviolet rays, and the application of a scalp lotion. The treatment for ordinary baldness is much less satisfactory, and, although there is evidence to indicate an hormonal influence in the development of ordinary baldness, treatment with estrogenic substances has not yet been established as a practical method of therapy. The subject of baldness and its treatment was recently reviewed in The Journal.

Reference:

Hair and Scalp Treatments and Preparations, J.A.M.A. **139**: 840-844, March 26, 1949. A report from the Committee on Cosmetics.

PUFFINESS UNDER EYES IN CHILDREN

To the Editor:—I read with interest the discussion of "Puffiness Under Eyes in Children" in the July 23 issue. Dr. Theron G. Randolph has described a syndrome which closely fits the type of case discussed. He calls it "fatigue syndrome" or "allergic toxemia." The symptoms are puffiness under the eyes (most noticeable in the outer, lower lid on arising), leg aches, nasal symptoms, sweating, tiredness unrelieved by rest and nervousness. It is not limited to children. In cases in which diagnostic criteria are fulfilled (including elimination of other possible causes of similar chronic symptoms) food tests are made, of the type developed by Herbert J. Rinkel following the lead of Albert H. Rowe. Common offenders are corn, wheat and milk. Using these methods I have been able to relieve patients to an extent which is nothing less than amazing.

Frederic Speer, M.D., Kansas City, Kan.

To the Editor:—The answer to the inquiry regarding "Puffiness Under Eyes in Children" in The Journal, July 23, 1949, did not mention chronic sinusitis, the probable cause in most cases in the northern part of the United States. This is particularly true in the absence of positive urinary findings, as noted in the inquirer's group of cases. Furthermore, the associated symptoms mentioned, such as anorexia, secondary anemia and frequent colds, are common in chronic sinusitis.

Circles and puffs under the eyes were the rule in cold-susceptible children in the Chest Clinic and in children with rheumatic fever treated at the New York Post-Graduate Hospital. In 100 rheumatic children, all of whom had chronic sinusitis, my co-workers and I reported that 91 per cent had circles under the eyes and many had puffiness as well, particularly on arising (Brown, E. E., and Wasson, V. P.: Incidence of Chronic Sinusitis in Rheumatic Children, *Arch. Pediat.* **59**:735 [Nov.] 1942). *The puffiness had been previously noted by Loeber and her co-workers* (A Definite Sign Pathognomonic of Paranasal Sinusitis, *J. Pediat.* **1**:565 [Nov.] 1932). *The sinuses fill up during recumbency, particularly if prolonged* (Brown, E. E.: Ill Effects of Prolonged Recumbency in Paranasal Sinusitis, *Arch. Pediat.* **59**:546 [Aug.] 1942) *and produce a congestion under the eyes and beside the nose. Puffs beside the nose were reported as existing in 86 per cent of rheumatic children with chronic sinusitis.*

The frequently recurring colds are exacerbations of chronic sinusitis (Brown, E. E.: Common Cold Not Caused by Virus, *Northwest Med.* **44**:39 [Feb.] 1945; abstracted in The Journal **127**:1155 [April 28] 1945), *each exacerbation causing increased puffiness.*

All of these symptoms in children can be aided, first by diagnosing chronic sinusitis (Brown, E. E., and Wasson, V. P.: Clinical Diagnosis of Chronic Sinusitis, *Arch. Pediat.* **59**:723 [Nov.] 1942) *and then using twice daily proper nose drops and warm wet towels to the face and elevating the head. The latter is accomplished by placing blocks, 2 to 6 inches* [illegible] *high, under the head end of the crib or bed.*

Edward E. Brown, M.D., Ashland, Ore.